Course: ECE 36200 - Microprocessor Systems and Interfacing

Type of Course: Required for the CmpE and EE programs

Catalog Description: An introduction to basic computer organization, microprocessor instruction sets, assembly language programming, and microcontroller peripherals.

Credits: 4

Contact Hours: Class: 3, Lab: 3

Prerequisite Courses: ECE 27000, ECE 29300, CS 229

Prerequisites by Topics: Digital logic design, computer programming.


Course Objectives: The objective of this course is to become familiar with the architecture and the instruction set of an ARM microprocessor. Assembly language programming will be studied as well as the design of various types of digital and analog interfaces. The accompanying lab is designed to provide practical hands-on experience with microprocessor software applications and interfacing techniques.

Course Outcomes: Students who successfully complete this course will have demonstrated:

1. an ability to program a microcontroller to perform various tasks [a,e,k]
2. an ability to interface a microcontroller to various devices [a,b,c,e,g,k]
3. an ability to effectively utilize microcontroller peripherals [a,k]

Lecture Topics:

1. Review of number systems
2. ARM microprocessor architecture
3. ARM microprocessor addressing modes
4. Assembly language programming and debugging
5. ARM assembly instruction set
6. ARM Cortex M3 based Microcontroller
7. Memory interfacing  
8. I/O interfacing  
9. Analog-to-Digital and Digital-to-Analog conversion interface  
10. Communication between the microprocessor and other peripherals

**Computer Usage**
High

**Laboratory Experience**
High

**Design Experience**
High

**Coordinator**
Yanfei Liu, Ph.D.

**Date**
05/03/15