Introduction to Microprocessor System

**Credits and hours:** 4 credits; 2 classes per week of 110 minutes each


**Supplemental materials:** none.

**Specific course information**

a. **Catalog description:** Architecture of a 16-bit microprocessor; addressing modes, instruction set, assembly and C language programming, program design, hardware model, exception handling and interface to memory and peripherals. Training kits will be used in the lab to run assembly and C programs.

b. **Prerequisites:** CDA 3201C, COP 2212.

c. **Required, elective, or selected elective:** selected elective

**Specific goals for the course**

a. **Specific outcomes of instruction:** By the end of the course students will:
   1. Learn the fundamental hardware and software structures of microprocessors.
   2. Learn the basic concept of microprocessor-based control systems.
   3. Develop basic to moderate skills in assembly language programming.
   4. Learn basic interface between computing systems and real-world devices.
   5. Demonstrate knowledge by performing 5 simple to moderate lab exercises using a MSP430 Launchpad connected to real-world I/O controls such as sensors and actuators.

b. **Student outcomes addressed by the course:** a, b, c, e, and k

**Brief list of topics to be covered:**

1. Preliminaries
2. Introduction to the MSP 430
3. Introduction to Code Composer Studio
4. Introduction to programming MSP430 in C
5. Introduction to assembly language
6. Digital input and output
7. Interrupts
8. Timers
9. Mixed signal processing