University of Wisconsin - Madison
College of Engineering [EGR]
Last Offered: 2015-2016 Spring [1164]

Direct Link to this Syllabus :

1. **E C E 353, Introduction to Microprocessor Systems**
2. **Credits :** 3  **Contact Hours :** 4.0

   a. **Other Supplemental Materials :** None

   - **Specific Course Information :**

     a. **Brief description of the content of the course (Course Catalog Description) :**

        Introduction to architecture, operation, and application of microprocessors; microprocessor programming; address decoding; system timing; parallel, serial, and analog I/O; interrupts and direct memory access; interfacing to static and dynamic RAM; microcontrollers.

     b. **Pre-requisites or Co-requisites :** ECE 352, Comp Sci 354, ECE 340 or concurrent registration

     c. **EE- Selected Elective**

        CMPE- Required

   - **Specific Goals for the Course :**

     a. **Course Outcomes :**

        1. Write assembly language software to accomplish a given task.
        2. Properly configure and utilize microprocessor peripherals, including timers, serial interfaces, parallel memory interfaces, DMA controllers, interrupt controllers, and analog interfaces.
        3. Interface a microprocessor to external input/output devices.
        4. Acquire and generate analog signals using a microprocessor based system.
• ABET Student Learning Outcomes:

(a) Ability to apply mathematics, science and engineering principles.
(b) Ability to design and conduct experiments, analyze and interpret data.
(d) Ability to function on multidisciplinary teams.
(e) Ability to identify, formulate and solve engineering problems.
(h) The broad education necessary to understand the impact of engineering solutions in a
global and societal context.
(i) Recognition of the need for and an ability to engage in life-long learning.
(j) Knowledge of contemporary issues.
(k) Ability to use the techniques, skills and modern engineering tools necessary for
engineering practice.

• Brief List of Topics to be Covered:
  1. Microprocessor System Design Process
  2. Hardware and Software Development Tools
  3. Introduction to the ARM Microprocessors
  4. ARM7TDMI Organization
  5. Instruction Set, Addressing Modes
  6. Stack, Branching, Subroutines
  7. Microprocessor Support Circuits and Peripherals
  8. Parallel Interfacing and Timing
  9. Memory Systems
  10. Interrupts and Exceptions
  11. Switches, Keypads, and Displays
  12. Serial Interfacing
  13. Analog Signals