

NEWARK COLLEGE OF ENGINEERING

SYLLABUS AND COURSE INFORMATION

- Course Name:** Embedded Systems I
- Course Number:** ECET 311
- Course Structure:** 2-2-3 (lecture hr/wk – lab hr/wk – course credits)
- Course Description:** Develops a working knowledge of the characteristics and applications of devices used in embedded systems such as microcontrollers. Emphasis is put on the architecture, instruction sets, and assemblers. Representative data handling problems and interfacing are studied and tested in the laboratory using state-of-the art hardware.
- Prerequisites:** (CPT 315 or ECE 251) and ECET 215
- Corequisites:** None
- Required, Elective, or Selected Elective:** Required
- Required Materials:** **Text:** Name: The AVR Microcontroller and Embedded Systems
Author: Mazidi, Naimi, Naimi
Year: 2010
ISBN: 978-0-13-800331-9
- Course Outcomes:** By the end of the course students are able to:
1. Convert numbers from one numbering systems to another.
 2. List and describe the fundamental parts of a microcontroller and explain the difference between a microcontroller and a microprocessor.
 3. Explain the relationship between hardware and software and how they work together to accomplish a task.
 4. Employ knowledge of system architecture, digital logic elements, and processor schematics to develop instruction level solutions to problems.
 5. Express instruction level programs using assembly language.
 6. Use hardware peripherals such as timers, PWM, A/D, serial, IO ports, and interrupts to develop robust and full-featured microcontroller programs.
 7. Utilize an Integrated Development Environment and a development board to assist in project design, troubleshooting, and debugging.
 8. Develop and analyze flow charts and hardware schematics to deduce or describe the operation and functions of an embedded system.
 9. Synthesize an embedded system and program from a real-life problem statement.

