

EE 416- Microcontroller Applications

Hour: Lecture: 2 Hrs.

Tutorial: 2 Hrs.

Credit: 3.

Coordinator: Yasser Galal

Text Book:

- S. F. Barrett, D. J. Pack, "Atmel AVR Microcontroller Primer: Programming and Interfacing", Morgan and Claypool Publishers

Specific course information:

- a. Introduction to Microcontrollers and Architectures with a review of various types available in the market - C-language programming overview - AVR Microcontroller basic structure - AVR Microcontroller basic programming principles - Timers and Counters, PWM – Analogue interfacing of AVR Microcontrollers - Serial interfacing standards using RS-232 principles of the PC - Serial Interfacing of the AVR Microcontroller
- b. Prerequisite: CC 442
- c. Designation: Required

Specific goals for the course:

- An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- An ability to function on multi-disciplinary teams.
- An ability to identify, formulate, and solve engineering problems.

Course instruction outcomes:

- The students will be able to Understand the basic principles of Microcontrollers
- The students will be familiar with C-language programming
- The students will be able to Provide a description of microcontroller peripherals and applications

Student outcomes:

C, D, E

Topics Covered:

- Introduction to Microcontrollers and Architectures with a review of various types available in the market
- C-language programming overview
- AVR Microcontroller basic structure
- AVR Microcontroller basic programming principles

- Timers and Counters, PWM
- Analogue interfacing of AVR Microcontrollers
- Serial interfacing standards using RS-232 principles of the PC
- Serial Interfacing of the AVR Microcontroller

Course / credit hours	Math & Basic Sciences	Engineering Topics	General Education
Microcontroller Applications /3		3✓	