



Hashemite University
College of Engineering
Department of Computer Engineering

DIC and Embedded Systems Lab.

(1 Credit Hours/Dept. Compulsory)

This course aims to provide students with a lab experience of Embedded Systems principles. It will focus on the software approach of designing the embedded systems including the microcontroller programming, also this course will cover the basics of Android programming and the basics of Spice Approach.

One of the most popular and easy to use microcontroller families available in the market today is the Microchip “**PIC microcontroller**”. PIC experiments are intended to facilitate the learning of PIC microcontroller interfacing and programming. Each topic is started with the background theory followed by simple experiments to explain how the theory can be implemented into actual applications. The first five experiments are PIC microcontroller using MPLAB and Proteus, the last experiments cover the Android application, and there is one experiment about Pspice :

Lab1(Basis of PIC Microcontroller & MPLAB IDE): this lab review the fundamentals and the main concepts in Embedded Systems design especially the software approach. The lab teaches the basics of how to design schematics and create programs for the microcontroller and how to debug and stimulate the design, using MPLAB and Proteus.

Lab2 (I/O Interfacing & the 7-Segment Display): learn how to interface the 7-segment display, LEDs and Switches with PIC Microcontroller.

Lab3(PIC Microcontroller Interrupts): this lab cover most aspects of the interrupt mechanism in the PIC microcontroller.

Lab4 (Controlling the LCD): Explain the HD44780 controller based LCDs and how to use and interface them with PIC microcontroller.

Lab5 (Interfacing the Keypad): to become familiar with keypad interfacing and usage.

Lab6 (Introduction to Android): Understand the basic ingredients of an Android Application.

Lab7 (Adding UI Components and Events): Create simple Android application with multi screens.

Lab8 (Multi Activity Applications, Intents and Filters): Administer the use of the Intents, Filters, Events and Event Listeners.

Lab9 (Introduction to Pspice): Introduce the Pspice utility to the students which help them build small Integrated Circuits and test it.





