



Internship on Embedded Systems Design Using PIC Microcontrollers

Course Fee	Rs 33,040/- (inclusive of taxes)	Duration	3 months
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Summary: This course is designed for those who need to be proficient in 8-bit microcontrollers that are commonly used in automotive actuators, industrial instrumentation and IOT applications.

Prerequisites: Basic knowledge of electronics, familiarity with digital logic, hardware design.

Audience: Firmware design engineers who have learnt about microcontrollers but have no practical experience in Microchip platforms at the C language level.

Course Contents

1. PIC Architecture and EDS-16F87X system demo with C program
2. Introduction to embedded C
 - o Embedded C compiler
 - o Build projects, debugging C/ASM/HEX files
3. Basic concepts about C
 - o Data types, constants, variables
 - o C declarations
 - o Loop Control Statements
 - o Preprocessor Directives
 - o Array, Pointers, structures, Operators
4. ADC, Timers and Interrupts, PWM
 - o Analog to Digital converter initialization and operations
 - o Timers and counters functions
 - o Timer Overflow Interrupts
 - o PWM Generation
5. Serial Communication
 - o Serial Communication using USART
 - o SPI and I2C communication
 - o CAN communication
6. Product Design Using PIC Controllers
 - o Requirements Design
 - o Schematic Design and development
 - o Component Selection
 - o Firmware Design and Testing

Programming examples in C language will be provided to demonstrate the capability of arithmetic and logical data processing capabilities. Programming examples in C language will be provided to demonstrate the capability of PIC microcontroller interface with peripherals for new product design. The peripherals of PIC16F877A will be used as an example and students will be required to execute tasks that demonstrate typical routines used in new product designs. Students will also be required to draw the schematics of typical interfaces that are common in power electronics, motor control, instrumentation and IOT applications. Project builds using PIC controllers will be practiced so that you are ready for the industry.

Course Director: Dr. Ramani Kalpathi (94440 34160)