Short Term Course – NIELIT PATNA CENTRE

Objective of the Course

The students will learn the architecture of 8051 microcontroller and will be able to design small industrial applications. This course will help students in understanding the importance of different peripheral devices & their interfacing to 8051 like keypad, display devices etc.

Learning Outcomes

After the end of the course, the student will be able to understand the hardware interfacing of the peripherals to microcontrollers. Design new embedded systems using microcontrollers.

Expected Job Roles

Embedded Engineer/ Embedded Technicians/Embedded Programmer

Duration of the course (in hrs.) - 80 hrs.

Apr. Fees (INR) – Rs.5000/- + GST

Minimum Eligibility Criteria and pre-requisites, if any –
10+2 / Diploma or above.

Outline of Course

Element	Course Description	Theory in Hrs.	Practical in Hrs.
Module1: Introduction to Embedded System	1.Introduction to Embedded System – Design considerations, Requirements, Scope, Architecture – Von Neumann and Harvard architecture 2.Design Microcontroller based system8051 – Introduction to Microcontroller/ Microprocessor, Introduction to 8051 Microcontroller and Simulation Software	10	05
Module 2: Introduction to C and Embedded C Programming	1. Basics Programming Structure of C and Embedded C 2. Conditional Statements 3. Loops, Functions and Pointers 4. Structures and Unions, Data Structures 5. Low level and Middle level programming concepts of Embedded C	05	10
Module 3: Architecture 8051 Microcontroller and Tools Required	1. Introduction to KEIL uvision IDE 2. Introduction to Proteus Software 3. Inside 8051 Microcontroller Architecture 4. General Purpose Input Output Port (GPIO) 5. Port Programming	15	10
Module 4 Interfacing external devices (like LCD, Keypad, and Motor etc.)	1.Interfacing external devices with 8051 - LCD and Seven Segment Display 2. Interfacing external devices with 8051 – Stepper Motor and Keypad 3. Interfacing external devices with 8051 –ADC interfacing and EEPROM/ RTC using I2C Protocol	05	20
	Theory/Lecture Hours	20	
	Practical/Tutorial Lecture Hours	60	
	Total Hours	80	

Books recommended for reference and reading:

The 8051 Microcontroller and Embedded Systems Using Assembly and C second Edition, Kindle Edition by Muhammad Ali Mazidi (Author), Rolin McKinlay, Janice Gillispie Mazidi (Author)

Course Name - **Certificate Course in Embedded System Design using 8051 Microcontroller**

Benefits

- Confidence build up with knowledge of range of Microcontrollers
- Good understanding of implementation of C concepts
- Fare understanding of Embedded Hardware and Software development
- Experience of best learning practice
- Acquire skills to do better Minor/Major Projects
- Can participate in various national/international competition and techfest

Features

- Knowledge of 8051 Microcontroller Architecture
- Knowledge of Embedded C & Sensors Programming
- Experience of working with real time programmer/debugger
- Personal Experience of working with Live Projects

Placement Details

This course helps the students to get placement in two ways.
1. Students apply directly. The theory, practical done during the course enables the students to pass the screening test and helps in the interview.
2. Students are encouraged to take up entrepreneurship/ Self-employment in line with Government of India initiatives like Make in India, ESDM etc.