



Name of Group: Electronics Division.

Name of Course: – Certificate Course in Embedded System Design using 8051 Microcontroller.

Objective:

- To train the students with the knowledge of Basic Electronics Concept and Circuit designing and C programming.
- To make familiar with Embedded System and various processes involved with Embedded C Programming and Architecture - 8051.

Duration: 1 Month.

Eligibility: Diploma/B.Sc./B.Tech/ ITI/ BSc. In Electronics, Electrical, Instrumentation Engineering or its equivalent. (Completed or Pursuing)

Course Content:

Modules:	Instruments and Measuring techniques to be covered.
Introduction to an Embedded System	Embedded System definitions, characteristics, design considerations, requirements, scope and application, Embedded System Architecture, RISC and CISC CPU architectures, Introduction to Microcontroller / Microprocessor, Introduction to 8051 Microcontroller and Simulation Software
Introduction to C and Embedded C Programming – Why C in Embedded	Introduction to C basics, Characteristics of C, C program structure, Variables, Constants, Logical Operators, Storage Classes Conditionals, Looping and Iteration, Arrays and Strings, Functions, Dynamic Memory Allocation, Pointers, Structures and Unions, Data Structures, Introduction to Embedded C Programming, Cross Compilers, Low Level Programming Concepts and Middle Level Programming Concepts
Architecture - 8051 Microcontroller and Tools Required	Overview of Architecture of 8051 – Processor core and functional block diagram of 8051, Descriptions of Memory organization, Overview of all SFR's and their basics functionality, General purpose Input Output Port(GPIO), Port Programming, Introduction to KEIL uvision IDE, Introduction to Proteus Software
Interfacing with external peripherals devices (like LCD, Keypad, Stepper Motor etc.) using 8051 microcontroller	Identify various pins and familiar with the pins functions of 8051, Programming and debug applications using Embedded C on 8051 platform, Configuring Timers, Interrupts and Serial Port on 8051 Microcontrollers, Interfacing LCD, Seven Segment Display, Keypad, Stepper Motor, ADC, EEPROM/RTC using I2C Protocol with 8051 Microcontrollers

- * These sessions will include Theory Classes, Demo and Practical, assignment and Project.