EMBEDDED COURSE SYLLABUS

An embedded system is a programmed controlling and operating system with a dedicated function within a larger mechanical or electrical system, often with real-time computing constraints. It is embedded as part of a complete device often including hardware and mechanical parts.

The course involves a span of 50 hours where the student will be trained from the basic level to the industrial level with hands on real time projects involving microcontroller, robotics concepts.

The students will be given course completion certificate at the end of the course and will be assisted in placements.

The course involves 3 stages of learning matlab

1. Beginner level
2. Intermediate level
3. Advanced level

1. Beginner level

INTRODUCTION TO EMBEDDED SYSTEM

• History & need of Embedded System

• Basic components of Embedded System

• Programming Language Classification of Embedded System

• Advantage & Disadvantage

MICROPROCESSOR & MICROCONTROLLER CLASSIFICATION

• Difference between Microprocessor & Microcontroller

• Classification based on architecture • Memory Classification

INTRODUCTION OF EMBEDDED C

• Introduction to Embedded C

• Difference between C & Embedded C

• Programming style

• Basic structure of C program

INTRODUCTION OF ARDUINO MICROCONTROLLER

Interfacing sensors, actuators and other peripherals to Arduino microcontroller

The intermediate level involves

- INTRODUCTION TO 8051 MICROCONTROLLER
- REGISTERS & MEMORY OF AT89C51
- Description of RAM
- Description of CPU Registers
- Functions of SFR
- INTRODUCTION TO SOFTWARES
    - Kiel Compiler
    - Proteus
- INTERFACING OF ADC
- INTERFACING OF LED
- INTERFACING OF SEVEN SEGMENT DISPLAY
- INTERFACING OF LCD
- INTERFACING OF SWITCHES & KEYBOARD MATRIX
- INTERFACING OF MOTORS
- TIMERS & COUNTERS PROGRAMMING
- SERIAL COMMUNICATION PROGRAMMING
- SENSOR INTERFACING

- EMBEDDED NETWORKING
    - I2C Bus Standard
    - Bluetooth
    - Zigbee
    - USB
    - UART

The advanced level involves

- INTRODUCTION TO LPC2148 (ARM) MICROCONTROLLER
- LINUX FUNDAMENTALS & DEVICE DRIVER PROGRAMMING
    - Linux Fundamentals
    - Linux Commands
    - VI Editors
    - Introduction to Device Driver
    - The Role of Device Driver
    - Kernel Module Vs Application
    - Types of Device Driver
    - Character Driver
    - Block Driver & Network Driver