



Embedded System

SYLLABUS

COVERAGE

- Introduction
- Basic Electronics Components
- Power supply Design
- Overview of Digital Electronics
- Semiconductor Memories
- Basics of Programming Language
- Programming in C
- Introduction to Microcontroller
- Memory Mapping
- Assembly language programming
- Software Development Tools
- LED Interfacing
- LCD Interfacing
- Development board testing
- SEVEN SEGEMENT DISPLAY interfacing
- Matrix keyboard interfacing
- FOURTEEN SEGMENT interfacing
- ROBOTICS basics
- ACTUATORS
- DC MOTOR interfacing
- New technologies and sensors

SYLLABUS IN DETAILS

Introduction

- Introduction to Embedded System
- Basics Of Embedded System
- Application of ES
- Examples of ES

Basic Electronics Components

- Resistor
- Capacitor
- Diode
- PNP transistor
- NPN transistor
- LED
- Step down Transformer
- Rectifier
- 7805 Voltage regulator IC
- Relay
- IR sensor
- PIR sensor
- LDR
- V-POT
- Ohm's and Watt's Law

Power supply Design

- Power Supply Circuit
- Practical design

Overview of Digital Electronics

- Binary, Octal, Decimal, Hexadecimal
- Gate :
AND, OR, NAND, NOR, XOR, INVERTER
- Gate IC's

Semiconductor Memories

- Address bus
- Data bus RAM
- ROM
- VONN NEUMANN architecture
- HARVARD architecture

Basics of Programming Language

- Compiler
- Interpreter
- Stages of compilation
- Data Types

- Modifiers
- Big-endian & Little-endian
- ASCII table
- Variables
- Operator

Programming in C

- Examples on different concepts
- Control structure
- Functions
- Storage classes
- Pointers
- Assembly language intro

Assembly language programming

- Instruction set and Programming
- Immediate Addressing
- Register Addressing
- Direct Addressing
- Indirect Addressing
- Indexed Addressing

Introduction to Microcontroller

- MP vs MC
- 8051 MC
- 8051 architecture
- 89s52 pin diagram
- Simulator vs Emulator

Memory Mapping

- Memory Addressing
- Program Memory – ROM
- Data Memory – RAM
- Internal RAM
- Registers
- Bit addressable memory
- Special Function Register

Software Development Tools

- KEIL
- Installation of KEIL
- PROTEUS
- Installation of PROTEUS
- USBasp driver
- Installation of USBasp driver
- USB to Serial Driver
- Installation of USB to Serial Driver

DC MOTOR interfacing

- Motor driver
- Manual robot making

New technologies and sensors

- RFID
- GSM
- GPS
- BLUETOOTH
- DTMF
- RF
- ULTRASONIC SENSOR

ACTUATORS

- Different types
- Examples
- Electrical actuators
- Application of actuators

ROBOTICS basics

- What is robotics
- Different types of ROBOT
- Manual and Autonomous ROBOT
- Basic parts
- Application of ROBOTICS & ROBOT
- LED Interfacing
- LCD Interfacing
- Development board testing
- Burning into MC
- SEVEN SEGEMENT DISPLAY
- interfacing
- Matrix keyboard interfacing
- FOURTEEN SEGMENT interfacing
- CONCLUSION : EMBEDDED SYSTEM, ROBOTICS
- PROJECTS & APPLICATIONS