8051/8052 Embedded System Course Content (30 Days)

1. Introduction to Embedded Systems

- History of Embedded
- Why Embedded System
- How Embedded System works
- Application of Embedded System
- Current Industrial Embedded System
- Future of Embedded System

2. Anatomy of Embedded Systems

- What are Basic Modules?
- Why Need of Basic Modules
- Working Approach on Embedded System

3. Introduction of Electronic Components

- What is Electronic Component?
- History of Electronic Component
- Various Electronic Component
- Application of Electronic Component
- How to use Electronic Component

4. Introduction to Sensors

- What is Sensor?
- Various Basic Industrial Sensors-IR- Analog Sensor
- IR Digital Sensor
- Light Sensor
- Sound Sensor
- Selection of Sensor
- Basic working Technique of Sensor
- Application of Sensor
- How to Interface Sensor

5. Introduction to Computational Devices

- What is Computational Device
- Transistor
- Logic Gates
- Microprocessor
- Microcontroller
- Difference B/W Various Computational Devices
- Application of various Computational Devices
- Selection of Computational Devices
- How to use Various Computation Devices

- Work on 8051 Family with S Series

6. Introduction to Programming Languages

- Various programming Languages
- Selection of programming Language
- Need of Flow Diagram
- How to write First LED BLINKING Code in Embedded C
- Why always First LED BLINKING Code?
- Practice on various LED Pattern
- Debugging of Error Program

7. Interfacing to Actuator

- What is Actuator?

8. How to work on Educational & Engineering Level Actuator

- DC Motor
- DC Geared Motor
- Stepper Motor
- Servo Motor

9. How to Drive Motor

- H-Bridge Motor Drive
- Advanced Motor Driver

10. Introduction to LCD Display

- Pin Description of 16x2 LCD Display
- Application of 16x2 LCD Display
- Programming of 16x2 LCD Display

11. Introduction to 7-Segment Display

- What is 7-Segment Display
- Types of 7- Segment Display
- Application of 7-Segment Display
- Programming of 7-Segment Display

12. Introduction to 4-bit Keypad and Matrix Keypad

- Use of Keypad
- How it works
- Interfacing of keypad of your application
- Programming of 4-bit Keypad and Matrix Keypad

13. Introduction to Timer/Counter

- What is Timer/Counter
- Application of Timers/Counter
- Registers of Timers/Counter's Different Modes

- Programming on AT89S52 Timers/Counter

14. Introduction to Interrupts

- What is interrupts
- Application of Interrupts
- Registers of Interrupts Different Modes
- Programming on AT89S52 Interrupts

15. ADC

- What is ADC?
- Use of ADC
- What is Resolution?
- Uses of different ADC Registers
- Interfacing of Analog Devices with Digital World

16. Serial Communication

- Difference between Parallel and Serial Communication
- USART / UART Protocol
- RS232 Standard
- TTL Converter
- UART Programming

17. Real Time Clock Interfacing Using DS1307

LIVE Projects Covered

- LED Blinking
- Running LEDs
- Sand Glass Filling of LEDs
- Decoration LEDs/ LED Patterns Etc.
- Sensor Interfacing (DEMO)
- DC Motor Driving (DEMO)
- DC Motor Driving using 4Bit Keypad (DEMO)
- Stepper Motor Driving (DEMO)
- Displaying your Name on LCD
- Blinking Text on LCD
- Scrolling Text on LCD
- Automatic Counting of Numbers using LCD
- Seven Segment Display
- Seven Segment Multiplexing
- Matrix Keypad Interfacing
- Counting of Numbers using Matrix Keypad
- Digital Visitor Counter(DEMO)
- Electronic Voting Machine
- Traffic Light Controller
- Home Security System
- Digital Clock with Alarm Set

Training Kits

8051 Embedded Systems Training Kit Content

- 1 x 8051 Development Board with AT89S52 Controller
- 1 x MAX232 IC
- 1 x DS1307 IC
- 1 x ULN2803 IC
- 1 x 16x2 LCD (Female)
- 1 x 8 Pin Female to Female Connecting Wire
- 1 x 3 Pin Female to Female Connecting Wire
- 2 x 4 Pin Female to Female Connecting Wire
- 6 Pin Female to Female Connecting Wire
- 8051 Programmer
- Software CD with more than 30 Working Codes for different Projects