Course & Kit Content

Of

Robotics & Embedded 'C'

Duration 15 Days

Kit Partner

Corporate Office
Robosapiens Technologies Pvt. Ltd.
B 5, Block 'C', Sector-31,
Noida-201301

Email: info@robosapi.com/
Website: http://www.robosapi.com

Course Name : **ROBOTICS WITH AVR**
Certification : By Robosapiens Technologies Pvt. Ltd.
Toolkit : **FREE** to Each Participant

Detailed Course Content

1. Introduction to Robotics

1.1. History of Robotics
1.2. Why Robotics
1.3. How Robotics works
1.4. Application of Robotics
1.5. Current Industrial Robotics
1.6. Future of Robotics

2 Anatomy of Robotics

3.1. What are Basic Modules?
3.2. Why Need of Basic Modules
3.3. Working Approach on Robotics

3 Introduction of Electronic Components

4.1. What is Electronic Component?
4.2. History of Electronic Component
4.3. Various Electronic Component
4.4. Application of Electronic Component
4.5. How to use Electronic Component

4. Introduction to Sensors

5.1. What is Sensor?

5.2. Various Basic Industrial Sensors-IR- Analog Sensor
5.3. IR Digital Sensor
5.4. Color IR_TSOP Sensor
5.5. Light Sensor
5.6. Sound Sensor
5.7. DTMF Module
5.8. Selection of Sensor
5.9. Basic working Technique of Sensor
5.10. Application of Sensor
5.11. How to Interface Sensor
5.12. How to Design Analog/Digital Sensors

5. Introduction to Computational Devices

6.1. What is Computational Device?
6.2. Transistor
6.3. Logic Gates
6.4. Microprocessor
6.5. Microcontroller
6.6. Difference B/W Various Computational Devices
6.7. Application of various Computational Devices
6.8. Selection of Computational Device
6.9. How to use Various Computation Device/
6.10. Work on AVR Family with Mega Series (ATmega8)

6. Interfacing to Actuator

7.1. What is Actuator?

7. How to work on Educational & Engineering Level Actuator

8.1. DC Motor
8.2. DC Geared Motor
8.3. Stepper Motor
8.4. Servo Motor

8. Introduction to Driving System/Locomotion

9.1. What is Driving System?
9.2. Various Types of Driving System
9.3. Why need Driving System

9. How to Drive Motor

10.1. H-Bridge Motor Drive
10.2. Advanced Motor Driver

10. Introduction to Programming Languages

11.1. Various programming Languages
11.2. Selection of programming Language
11.3. Need of Flow Diagram
11.4. How to write First “LED BLINKING” Code in Embedded C
11.5. Why always First “LED BLINKING” Code?
11.6. Practice on various LED Pattern
11.7. Debugging of Error Program

11. Introduction to LCD Display

12.1. Pin Description of 16x2 LCD Display
12.2. Application of 16x2 LCD Display
12.3. Programming of 16x2 LCD Display

12. Introduction to 7-Segment Display

1.1. What is 7-Segment Display
1.2. Types of 7- Segment Display
1.3. Application of 7-Segment Display
1.4. Programming of 7-Segment Display

13. Interfacing of Anatomy of Robot

14.1. Assembling of Robot

14. Introduction to Timer/Counter

15.1. What is Timer/Counter
15.2. Application of Timers/Counter
15.3. Registers of Timers/Counter's Different Modes
15.4. Programming on Atemga8 Timers/Counter

15. Introduction to Interrupts

16.1. What is interrupts
16.2. Application of Interrupts
16.3. Registers of Interrupts Different Modes
16.4. Programming on Atmega8 Interrupts

16. Introduction to Analog to Digital Convertor (ADC)

17.1. ADC, How it works???

17.2. Different Mode and Registers of ADC
17.3. Programming ADC

17. Serial Communication

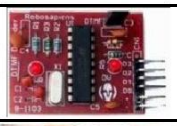
18.1. Difference between Parallel and Serial Communication
18.2. USART / UART Protocol
18.3. RS232 Standard
18.4. TTL Converter
18.5. UART Programming

LIVE Projects Covered

1. LED Blinking
2. Running LEDs
3. Sand Glass Filling of LEDs
4. Decoration LEDs/ LED Patterns Etc.
5. Sensor Interfacing
6. DC Motor Driving
7. Black Line Follower using two IR-Sensor
8. White Line Follower using two IR-Sensor
9. Sound Operated Robot
10. Light Searching Robot
11. Wall follower Robot
12. Edge Avoider Robot
13. Intelligent Line Follower Robot
14. Grid Solving Robot (DEMO)
15. Mobile Controlled Robot
16. Blinking LEDs using TIMER0
17. Blinking LEDs using Interrupts
18. Stepper Motor Driving (DEMO)
19. Servo Motor Driving (DEMO)
20. Displaying your Name on LCD
21. Blinking Text on LCD
22. Automatic Counting of Numbers using LCD
23. Seven Segment Display
24. Seven Segment Multiplexing
25. Digital Voltage Measurement
26. PC to µC Communication
27. µC to PC Communication

15 Days KIT Contains

S. No.	Name of the Component	Quantity	Figure
1	Robosapien's Atmega8 Development Board	1	
2	USB Cable A to B Type	1	
3	2X16 LCD Display	1	
4	Robosapien's Educational and Software Material CD	1	
5	IR Digital Sensor	2	
6	Sound Sensor	1	
7	150 RPM Single Shaft BO Rectangle	2	
8	Robosapiens Caster Wheel	1	
9	Robosapiens 76mm Wheel	2	
10	Robosapiens Chassis Board	1	
11	Screw Driver	1	
12	Nut Bolt Packet	1	

13	DTMF Module	1	
14	Robomart USB to TTL Bridge	1	
15	8 PIN Female to Female Jumper Wire	1	
16	3 PIN Female to Female Jumper Wire	1	
17	1 PIN Female to Female Jumper Wire	4	
18	Analog Voltage Sensor	1	
19	Double Digit Common Anode Seven Segment Display	1	
20	Paper Beg/Box	1