



**Course & Kit Content
Of
ARUDINO**

Duration 15 Days

Kit Partner

ROBOMART.com

Corporate Office

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Course Name	: Arduino
Certification	: By Robosapiens Technologies Pvt. Ltd.
Fee	: 7900/- Only
Toolkit	: FREE to Each Participant

Detailed Course Content

1. Introduction to Embedded Systems

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

2. Anatomy of Embedded Systems

- 2.1. What are Basic Modules?
- 2.2. Why Need of Basic Modules
- 2.3. Working Approach on Embedded System

3. Introduction to Open Source platform

- 3.1. An Overview of Open Hardware
- 3.2. Arduino Board Description

4. 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

5. Introduction to Sensors

- 5.1. What is Sensor?
- 5.2. Various Basic Industrial Sensors-IR- Analog Sensor
- 5.3. IR Digital Sensor
- 5.4. Selection of Sensor
- 5.5. Basic working Technique of Sensor
- 5.6. Application of Sensor
- 5.7. How to Interface Sensor
- 5.8. How to Design Analog/Digital Sensors

6. 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 Devices
- 6.9. How to use Various Computation Devices
- 6.10. Microcontroller architecture and Interfacing
- 6.11. Introduction to Microcontrollers & the Arduino Platform
- 6.12. How can we use microcontroller in our circuits.

7. Introduction to Programming Language

- 7.1. Programming Languages- Assembly Vs Embedded 'C'
- 7.2. Microcontroller Programming using Embedded 'C'

8. Introduction to software tool chain

- 8.1. Software Installation
- 8.2. Getting started with the Arduino IDE to start writing your first program
- 8.3. Writing your First 'Embedded C' Program

9. Interfacing of I/O devices

9.1. LEDs

- 9.1.1. Types of LEDs.
- 9.1.2. How LEDs works?
- 9.1.3. How LEDs will glow in sequence?
- 9.1.4. Interfacing of LED with Arduino

9.2. Switch

- 9.2.1. Types of switches
- 9.2.2. Their Functions
- 9.2.3. Interfacing of switch with Arduino

9.3. Buzzer

- 9.3.1. Types of Buzzer
- 9.3.2. Uses of Buzzer in Real Time
- 9.3.3. Interfacing of Buzzer with Arduino

10.Display Devices

- 10.1.Types of Display Devices
- 10.2.What is a Seven Segment Display?
- 10.3.Internal Structure of Seven Segment
- 10.4.How to glow Seven Segment?
- 10.5.Interfacing of Seven Segment with Arduino
- 10.6.Multiplexing

11.How to work on Educational & Engineering Level Actuator

- 11.1.DC Motor
- 11.2.DC Geared Motor
- 11.3.Stepper Motor
- 11.4.Servo Motor

12.How to Drive Motor

- 12.1.H-Bridge Motor Drive
- 12.2.Advanced Motor Driver

13.Introduction to Timer/Counter

- 13.1.What is Timer/Counter
- 13.2.Application of Timers/Counter
- 13.3.Registers of Timers/Counter's Different Modes
- 13.4.Programming on Atmega8 Timers/Counter

14.Introduction to Interrupts

- 14.1.What is interrupts
- 14.2.Application of Interrupts
- 14.3.Registers of Interrupts Different Modes
- 14.4.Programming on Atmega8 Interrupts

15.ADC

- 15.1.What is ADC?
- 15.2.Use of ADC 15.3. What is Resolution?
- 15.4. Uses of different ADC Registers
- 15.5. Interfacing of Analog Devices with Digital World







16.Serial Communication

- 16.1.Difference between Parallel and Serial Communication
- 16.2.USART / UART Protocol
- 16.3.RS232 Standard
- 16.4.TTL Converter
- 16.5.UART Programming




LIVE Projects Covered

1. LED Blinking
2. Running LEDs
3. Sand Glass Filling of LEDs 4. Decoration LEDs/ LED Patterns Etc.
5. De-bouncing
6. Buzzer Testing
7. Sensor Interfacing
8. DC Motor Driving
9. DC Motor Driving using 4Bit Keypad
10. Black Line Follower using two IR-Sensor
11. White Line Follower using two IR-Sensor
12. Stepper Motor Driving (DEMO)
13. Wall follower Robot
14. Edge Avoider Robot
15. Intelligent Line Follower Robot
16. Cell Phone Controlled Robot (DEMO)
17. Seven Segment Display
18. Seven Segment Multiplexing
19. Blinking LEDs using TIMER0
20. Blinking LEDs using Interrupts
21. PC to μ C Communication
22. μ C to PC Communication
23. Computer Keyboard Robot (DEMO)
24. Digital Voltage Measurement
25. Counting of Numbers using 4 bit Keypad
26. Digital Visitor Counter
27. Temperature Controlled Fan (DEMO)
28. Digital Thermometer (DEMO)
29. Home Security System
30. Home Automation System (DEMO)

15 Days KIT Contains

Sl. No.	Name of the Component	Quantity	Figure
1	Robomart Arduino Board	1	
2	4 bit Keypad	1	
3	4 bit LED	1	
4	Analog Voltage Sensor	1	
5	Double Digit Common Anode Seven Segment Display	1	
6	Robosapien's Educational and Software Material CD	1	
7	Digital Buzzer Module	1	
8	USB Cable A to B Type	1	
9	IR Digital Sensor	2	
10	150 RPM Single Shaft BO Rectangle	2	
11	Robosapiens Caster Bullet	2	

			
12	Robosapiens 76mm Wheel	2	
13	Robosapiens Chassis Board V 2.0	1	
14	Screw Driver	1	
15	Nut Bolt Packet	1	

16	8 PIN Female to Female Jumper Wire	1	
17	4 PIN Female to Female Jumper Wire	2	
18	2 PIN Female to Female Jumper Wire	2	
19	1 PIN Female to Female Jumper Wire	5	
20	Paper Beg/Box	1	