

Robotics with IOT



Course Details:

This course offers with the ability to master the technology of Robotics from scratch. The course dives deeper into the field giving you a proper understanding of all things that go into making a Robot. We start off with Arduino so that learning is easier and fun. At Technol we believe in creating robots that will solve many problems and you can be their king. We cover the following topics under The Robo-King module:

Module 1: Introduction to Robotics

- Why Robotics?
- How Robotics works
- Application of Robotics
- Future of Robotics

Module 2: Introduction of Electronics

- Overview of basic electronics and digital electronics
- Applications of Resistors, Capacitors, Diodes and Transistors
- Introduction to breadboard

Module 3: Circuit Designing

- Software Installation
- Basic circuit Development
- Soldering
- PCB Designing

Module 4: Microcontroller vs. Microprocessor

- Microprocessor And Microcontroller
- Common Features of Microcontroller
- Different Types of Microcontroller
- Applications

Module 5: Introduction of Arduino

- Architecture
- Device and platform features
- Arduino IDE Software
- Installation of Arduino IDE

Module 6: Input and Output Ports of Arduino

- Digital pins of Arduino
- pinMode() in Arduino
- digitalWrite() in Arduino
- Pull-up and Pull-down resistors
- digitalRead() in Arduino

Module 7: Embedded C programming

- C programming Overview
- If-else Statement
- For loop
- While Loop
- DO-while Loop
- Switch Statement
- Defining Functions in Arduino

Module 8: Light Emitting Diode and Arduino

- Overview of LED's
- Interfacing LED with Arduino
- Blinking of LED's
- Generating Even and Odd patterns in LED's
- Traffic Light System

Module 9: How to Drive Motors?

- Overview of DC Motor
- H-Bridge Driver(L293D)
- Interfacing motors with Arduino
- Making of Manual Robotic Vehicle

Module 10: Programming Arduino to Make Robot Move

- Programming Logic for Making Robot Move
- Writing Arduino Code to Make Robot Move

Module 11: Sensors and Actuators

- Sensors and actuators Explanation
- Basic Working of Sensors
- Temperature and Humidity Measurement
- Digital Thermometer Using Arduino

Module 12: Sensing Light Using IR Sensors and Arduino

- Overview of IR sensor
- Circuit Diagram of IR sensor interfacing with Arduino
- Calibration of IR sensor with Arduino
- Application of IR sensor

Module 13: Line Follower Concepts

- Programming Logic for Line Follower Robot
- Designing Arduino program for Line Follower
- Testing of Line Follower

Module 14: Edge Avoider Robot

- Programming Logic for Edge Avoider Robot
- Designing Arduino program for Edge Avoider
- Testing of Edge Avoider Robot

Module 15: Liquid Crystal Display

- Overview of Alphanumeric LCD
- PINOUT of 16*2 LCD
- Interfacing 16*2 LCD with Arduino
- Horizontal Scrolling in 16*2 Alphanumeric LCD with Arduino
- Applications of LCD

Module 16: Ultrasonic Sensor with Arduino

- Overview of Ultrasonic sensor
- Circuit Diagram of Ultrasonic sensor interfacing with Arduino
- Calibration of Ultrasonic sensor with Arduino
- Distance Measurement using Ultrasonic Sensor

- Application of Ultrasonic sensor

Module 17: Obstacle Avoider Robot

- Programming Logic for Obstacle Avoider Robot
- Designing Arduino program for Obstacle Avoider
- Testing of Obstacle Avoider Robot

Module 18: Bluetooth Communication with Arduino

- Introduction of HC05 Module
- Pin Configuration of HC05
- Interfacing of HC-05 Bluetooth Module with Arduino
- Reading Data from Bluetooth Module

Module 19: Mobile Controlled Robot

- Programming Logic for Mobile Controlled Robot
- Designing of Arduino program
- Testing of Mobile Controlled Robot

Module 20: Voice Controlled Robot

- Programming Logic for Voice Controlled Robot
- Designing Arduino program for Voice Controlled Robot
- Testing of Voice Controlled Robot

Module 21: Relays with Arduino

- Brief description of Relays
- Applications of Relays
- Circuit Diagram of Relay Driving Circuit
- Relay Interfacing with Arduino

Module 21: Home Automation and IOT

- Basic concepts of IOT
- Connecting with Cloud
- The world of home automation

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