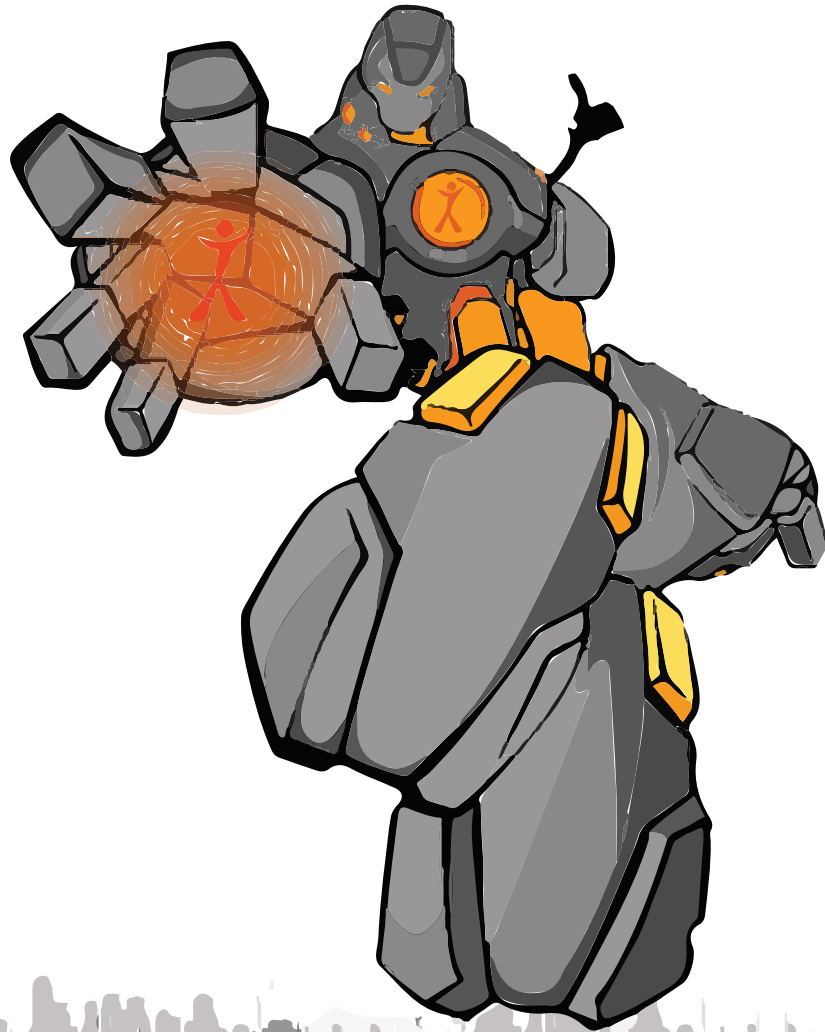


# Winter Camp



## COURSE CURRICULUM

ROBOTICS & INTERNET OF THINGS

TECHNO  
PHILIA



## **SESSION**

### **1**

## **LET'S LEARN EMBEDDED SYSTEM& ROBOTICS**

- Introduction of Embedded System
- Introduction of Robotics & Robots
- Use of Embedded & Robotics
- How we are in connecting this with Real life/World

### **Your learning after this session**

After completion of this section students will get a basic idea about Embedded System, Robotics and Robots.

## **SESSION**

### **2**

## **LET'S START ARDUINO**

- Introduction to Microcontroller.
- Difference between AVR, 8051, PIC and Arduino.
- Introduction to Arduino platform.
- Install Arduino Software on laptop.
- Use of Arduino IDE
- Make your 1st Sketch

### **Your learning after this session**

After completion of this section students will aware with Microcontrollers, Arduino IDE and able to do sketch.

- Blink LED Using Arduino.
- Use Switch to Blink LED in different pattern.
- Interfacing IR
- Interfacing Sound Sensor
- Interfacing motor
- L293D IC
- Use of serial monitor.
- Display value of Sensor on serial monitor
- What is automation?
- Run relay from Arduino.
- Run motor from Arduino.
- Make a robotics project (Line follower or Obstacle detector or obstacle avoider)
- Make an automation project (light operated relay or automated light control system)

**PROJECT TO BE COVERED:**

- LED's Patters
- Digital Counter Using LED's
- Display the Current Strength of Cinema hall on LED's
- Line Follower Robot
- Edge Avoider Robot
- Wall follower Robot
- Obstacle Avoider Robot

## **Your learning after this session**

The pupils will learn how to work on microcontroller. Control input and output from microcontroller. How microcontroller interact with PC. Last but not least make one automation system to operate home appliances and old & trusty line follower or obstacle avoider.

## **SESSION**

### **4**

## **INTRODUCTION TO SERIAL COMMUNICATION**

- USART Introduction.
- Initialization of USART.
- Sending data by Serial communication.
- Receiving data by Serial communication.

**PROJECT TO BE COVERED:** Controlling Bot through Mobile App.(Android App.)

## **Your learning after this session**

After covering this section students will get the idea about Communication (Serial /Parallel) and control bot through mobile app.

## **SESSION**

### **5**

## **WORKING AND CONNECTION OF RELAY WITH ARDUINO BOARD**

- Basic of Relay
- Interfacing of relay with bot

**PROJECT TO BE COVERED:** Control High Voltage Operated Devices Using Relay

## Your learning after this session

After covering this module students will easily control high voltage devices (Like: all home appliances) through logic generate by bot that means they able to make smart home.

### SESSION

### 6

## INTRODUCTION TO BLUETOOTH MODULE (HC-05/HC-06)

- Introduction of Bluetooth device
- Interface with Bot

- PROJECT TO BE COVERED:**
- Controlling Bot Using Bluetooth Device Through Mobile
  - Controlling Home Appliances Using Bluetooth

## Your learning after this session

After this section students will get the idea about controlling Bot through Bluetooth in its range.

### SESSION

### 7

## INTRODUCTION TO WIFI MODULE (ESP8266)

- Introduction to WiFi module (ESP8266)
- AT command Set for WiFi module.
- Connect to WiFi Network

## Your learning after this session

Here students will get the idea about wifi module and its connections with bot.

- Interfacing WiFi module with Arduino.
- Use of Serial Monitor
- Connect to WiFi from Arduino.
- Connect to website from Arduino.
- Receive data from web server on Arduino.
- Interface with Bot

- PROJECT TO BE COVERED:**
- Controlling Arduino Embedded System through Web Server.
  - Controlling Home Appliances Using Wifi
  - Controlling Bot Using WiFi Module Through Web Server

### **Your learning after this session**

Here students will be able to do and control all home appliances and bot through internet (Through Webpage) and basic idea regarding how to design webpage using html and php.