

Description:

Internet of Things, or IoT in short, is the internetworking of physical devices like sensors, motors or simply a smart device and linking them to cloud, so as to get updates remotely from almost anywhere. IoT has promising applications for smart homes, wearable devices, smart cities, connected cars and more.

This project-based course introduces you the amazing world of Internet of Things (IoT). The students will be able to work from the basic to the advanced level Arduino based IOT projects with practical exercises on key technologies. Thereby the course will provide great understanding of IOT and how IOT is going to change the way we live in the near future.

Apart from gaining practical skills on Internet of Things, you will work with various sensors like water flow meter, PIR sensor, LDR sensor, DHT sensor, soil moisture sensor, Arduino Board including programming, ESP 8266 WiFi connector and Thingspeak IOT analytics platform as part of this course.

Course Objectives:

- To understand the basic concepts of Internet of Things (IoT)
- To understand the different components of an end-to-end IoT system
- To compare, and contrast Hardware of IoT systems
- To understand the Networking Subsystem of IoT system
- To understand Data Analytics for IoT

Course Outcomes:

- Get idea and concepts of Internet of Things (IoT)
- Understand the requirements and specification of Internet of Things
- Gain the knowledge of hardware subsystem of Internet of Things
- Gain the knowledge of Networking subsystem of Internet of Things
- Understand the Intelligent system of IoT

Session Plan:

| Sl no | Session | Topics |
|-------|--------------------------|--|
| 1 | Session 1 | <ul style="list-style-type: none">• Introduction to IOT• What is IOT? Why should we learn IOT Concepts? |
| 2 | Session 2 | <ul style="list-style-type: none">• Future Scope and Job Opportunities in the field of IOT. Applications of IOT.• Discussion of various use cases. |
| 3 | Session 3 | <ul style="list-style-type: none">• IOT architecture – Theory Concepts.• IOT components and structure |
| 4 | Session 4 | <ul style="list-style-type: none">• IOT applications – smart homes, smart agriculture, smart cities, smart transportation, smart cities, Intelligent electronic products. |
| 5 | Session 5 | <ul style="list-style-type: none">• Software Introduction and Installation of Arduino IDE• Introduction to embedded C – for programming. |
| 6 | Session 6 | <ul style="list-style-type: none">• Introduction and Hands on session with ESP8266 Nodemcu – building block and heart of IOT prototyping. |
| 7 | Session 7 | <ul style="list-style-type: none">• Nodemcu architecture (explaining about pin configuration and various components on it). |
| 8 | Session 8 | <ul style="list-style-type: none">• Interfacing Nodemcu with various sensors(input and output) digital sensors, sensing environment with sensors. |
| 9 | Session 9 | <ul style="list-style-type: none">• Connecting the device to the internet and sending sensor values to the server for analytics using graphs. |
| 10 | Session 10 | <ul style="list-style-type: none">• Controlling the device remotely, Introduction to Blynk App – for controlling devices from anywhere in the world, Hands on with mini project. |
| 11 | Session 11 | <ul style="list-style-type: none">• Introduction to Thingspeak – Open Cloud platform to upload and analyze data from IOT devices. |
| 12 | Session 12 | <ul style="list-style-type: none">• Sending Sensor Values to Cloud – Thingspeak and analysing the values. |
| 13 | Session 13 | <ul style="list-style-type: none">• Introduction to voice assistant systems – Google assistant |
| 14 | Session 14 | <ul style="list-style-type: none">• Google Assistance |
| 15 | Session 15 to Session 20 | <ul style="list-style-type: none">• Voice Controlled Home Automation System – Mini Project and hands On |