

# **Internet of Things (IoT) & Smart Automation Internship**

**(15 Days | Practical-Oriented | Industry Ready)**

## **INTERNSHIP SYLLABUS**

### **Internship Objectives**

By the end of this internship, students will be able to:

- Understand IoT architecture & components
- Work with sensors, actuators, and microcontrollers
- Build real-time IoT systems using Arduino / ESP32
- Connect devices to cloud platforms
- Implement smart automation use cases
- Design and deploy a working IoT project independently

### **Tools & Technologies**

- Arduino / ESP8266 / ESP32
- Sensors: DHT11, IR, Ultrasonic, LDR, Gas
- Communication: Wi-Fi, MQTT, HTTP
- Cloud: Thing Speak / Firebase / Blynk
- Programming: Embedded C, Basic Python
- Automation Concepts
- IoT Security Basics

## **DAY 1 – Introduction to IoT & Smart Automation**

- What is IoT?
- IoT vs Automation vs Smart Systems
- Real-world IoT applications (Smart Home, Smart City, Industry 4.0)

### **Practical**

Arduino IDE installation

Board & driver setup

### **Outcome**

Student understands IoT ecosystem

## **DAY 2 – IoT Architecture & Hardware Basics**

- IoT Architecture (Device → Gateway → Cloud → App)
- Microcontrollers vs Microprocessors

### **Practical**

Arduino board overview

LED blinking program

### **Outcome**

First hardware program executed

## **DAY 3 – Sensors & Actuators**

- Types of sensors
- Digital vs Analog sensors

### **Practical**

Temperature & Humidity sensor (DHT11)

LED & buzzer control

### **Outcome**

Sensor data reading

## **DAY 4 – Interfacing Sensors**

- Sensor calibration
- Sensor data accuracy

### **Practical**

Ultrasonic distance sensor

IR obstacle sensor

### **Outcome**

Distance & object detection system

## **DAY 5 – Smart Automation Logic**

- Automation rules & triggers
- Event-based systems

### **Practical**

Automatic street light using LDR

Motion-based alarm system

### **Outcome**

Rule-based automation

## **DAY 6 – IoT Communication Basics**

- Wi-Fi, Bluetooth, GSM
- HTTP vs MQTT

### **Practical**

ESP8266/ESP32 Wi-Fi connection

Sending data over Wi-Fi

### **Outcome**

Device connected to internet

## **DAY 7 – Cloud Platforms for IoT**

- Role of cloud in IoT
- Data storage & visualization

### **Practical**

Thing Speak setup

Live sensor data upload

### **Outcome**

Cloud-based data monitoring

## **DAY 8 – Mobile App Controlled IoT**

- App-based automation
- Real-time control

### **Practical**

Blynk / Firebase integration  
Control LED via mobile app

### **Outcome**

App-controlled IoT system

## **DAY 9 – Smart Home Automation**

- Smart appliances
- Relay modules

### **Practical**

Smart fan/light control  
Voice / app-based switching

### **Outcome**

Smart home prototype

## **DAY 10 – IoT Data Analytics Basics**

- IoT data types
- Basic visualization

### **Practical**

Sensor data graphs  
Threshold-based alerts

### **Outcome**

Data-driven automation

## **DAY 11 – IoT Security Basics**

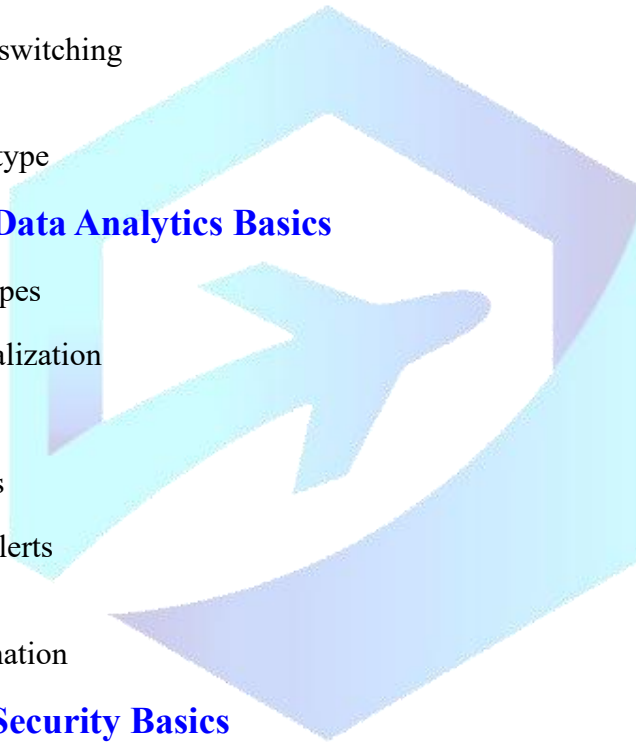
- IoT security threats
- Data encryption basics

### **Practical**

Secure Wi-Fi connection  
Token-based access

### **Outcome**

Secure IoT communication



## DAY 12 – Mini Project Design

- Project planning
- Hardware & software mapping

### Practical

Smart parking

Smart irrigation

Smart energy meter

### Outcome

Project blueprint ready

## DAY 13 – Mini Project Implementation

### Practical

Hardware wiring

Code integration

Cloud connection

### Outcome

Working IoT mini project

## DAY 14 – Final Project Development

### Practical

Full automation logic

App + cloud + device integration

### Outcome

Industry-level IoT project

## DAY 15 – Testing, Demo & Documentation

### Activities

- Live project demo
- Error handling
- Project report & PPT

### Outcome

Ready for project submission & interviews