IoT Syllabus

Module 1: Introduction to IoT

- What is IoT?
- History & Evolution
- Why IoT matters today

Module 2: Applications of IoT

- Use Cases: Smart Cities, Homes, Agriculture, Health
- Real-time video/industry example showcase

Module 3: IoT System Architecture

- 3-Layer Model: Perception, Network, Application
- Device to cloud flow explained with example

Module 4: IoT Hardware Components

- Sensors, Actuators, Microcontrollers
- Breadboard basics

Module 5: Communication Technologies in IoT

- Wi-Fi, Bluetooth, Zigbee, LoRa, Cellular
- Where to use what?

Module 6: Microcontroller Basics (Arduino)

- What is Arduino UNO?
- Features, Ports, Power

Module 7: Arduino IDE Introduction

- Installing Arduino IDE
- Simple code structure

- Uploading program

Module 8: Hands-on: Blinking LED

- First IoT hardware activity
- Circuit connection + code

Module 9: Understanding Sensors

- Temperature, LDR, Ultrasonic
- How they work and demo

Module 10: Hands-on: Sensor with Arduino

- Connect any sensor (e.g., DHT11 or LDR)
- Print values on Serial Monitor

Module 11: Actuators in IoT

- Types: Buzzer, Motor, Relay
- Demo & use case

Module 12: Hands-on: Actuator Control

- Code to control buzzer/motor via sensor

Module 13: Cloud in IoT

- Cloud Role & Real-time Data Storage
- What is an IoT platform?

Module 14: Introduction to Blynk/ThingSpeak

- Create a free IoT dashboard
- Upload sensor data to cloud

Module 15: Mobile App Control (Blynk)

- Control LED or device using a mobile phone

- Demo: Button press = LED on/off

Module 16: IoT Data Visualization

- Line chart / gauge view on dashboard
- How to interpret sensor data

Module 17: IoT Security Basics

- Why IoT devices are vulnerable
- Common attacks & how to stay safe

Module 18: Industry Use Cases & Trends

- Industrial IoT, Healthcare, Smart Retail
- Emerging trends (AI + IoT, Edge computing)

Module 19: Mini Project Development

- Plan: Smart Garden / Home Automation / Weather Logger
- Circuit + Code + Dashboard

Module 20: Project Demo + Internship Wrap-up

- Project presentation