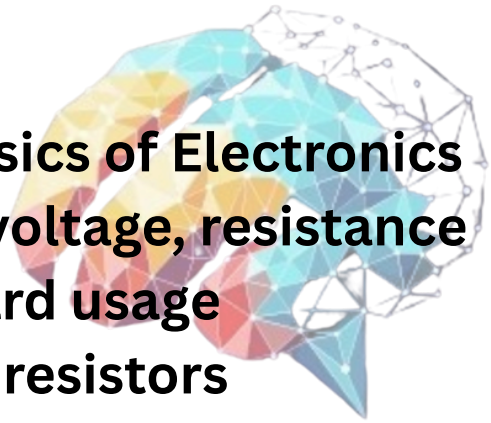
IoT beginner level

Curriculum

Tabel Of Content

Module 1: Introduction to IoT

- What is IoT?
- Real-world IoT applications (Smart Home, Agriculture, Healthcare)
- How IoT works (Device → Internet → User)
- Examples of IoT products
- ✅ Activity: Identify IoT devices around you



Module 2: Basics of Electronics

- **Current, voltage, resistance**
- **Breadboard usage**
- **LEDs and resistors**
- **Safety in electronics**
- ✅ **Hands-on: LED blinking circuit**

Module 3: Introduction to Microcontrollers

- What is ESP32 / NodeMCU?
- GPIO pins overview
- Digital input & output
- Uploading first program
- ✅ Hands-on: LED control using ESP32

Module 4: Introduction to Coding

- Arduino IDE setup
- Basic programming concepts
- Variables, loops, conditions
- Uploading and debugging code
- ✅ Hands-on: LED blink using code

Module 5: Sensors & Data Collection

- What are sensors?
- LDR (light detection)
- DHT sensor (temperature & humidity)
- Reading sensor values
- ✅ Hands-on: Temperature monitoring system

Module 6: Internet Connectivity

- What is WiFi?
- Connecting ESP32 to WiFi
- Sending data to the internet
- Introduction to IoT platforms (Blynk / Thingspeak)
- ✅ Hands-on: Send sensor data to mobile/dashboard

Module 7: Remote Control & Automation

- Controlling devices from mobile
- Relay module basics
- Home automation concept
- ✅ Hands-on: Mobile-controlled light/fan demo

Module 8: Mini IoT Projects

- Students build real-world beginner projects such as:
- Smart Light Controller
- Temperature Monitoring System
- Automatic Night Lamp
- Mobile App Controlled Switch
- Smart Alert System (Buzzer)

🧠 Core Skills Developed

- Logical thinking & problem-solving
- Basic electronics knowledge
- Beginner-level coding
- IoT system understanding
- Creativity & innovation
- Confidence in technology

🏆 Learning Outcomes

- By the end of the program, students will:
- Understand IoT fundamentals
- Build working IoT projects
- Write basic microcontroller code
- Connect devices to the internet
- Control devices using a mobile app

📜 Certification

- **BotNest IoT Beginner Program Certificate**
- **Project-based assessment**