



### ❖ **Module # 1: Introduction**

- Background and Development
- Three waves of Internet
- Why IoT?
- Market Analysis & Investment In IoT
- Industrial & Consumer IoT
- M2M communication and automation history
- Relation with embedded systems
- General introduction to Arduino , Raspberry Pi and SmartWifi boards

### ❖ **Module # 2: IoT Architecture**

- How IoT Works?
- High level Data Flow in IoT
- Technical Architecture
- Description of all layers of IoT Architecture
- Technologies for IoT

### ❖ **Module # 3: Understanding IoT Ecosystems**

- What is IoT application?
- What are basic elements / building blocks of IoT app?
- How are these blocks connected together?
- The systematic method to design IoT application
- Architecting our hands-on project

### ❖ **Module # 4: Raspberry Pi**

- Learning fundamentals of Raspberry Pi
- Different types of pi boards.
- Installation of OS in Raspberry Pi
- Programming Raspberry Pi Using Python
- Python Introduction
  - Numbers, List, Tuple & dictionaries

- If else statements
- Loop & Control Statements
- File Handling
- Understanding Functions
- Raspberry Pi Programming
- Interfacing Sensors with Raspberry Pi

#### ❖ **Module # 5: IoT Gateways**

- Introduction to IoT Gateway
- ESP8266 Module as Wi-Fi Gateway
- Learning AT Commands of ESP8266
- Programming on ESP8266 Wi-Fi Module

#### ❖ **Module # 6: Cloud Platforms for IoT**

- Introduction to Cloud
- It's different models of Cloud
- Overview different IoT cloud platforms
- How to get Access to Cloud Platforms
- Sending Data to IoT Cloud Platform
- Sending Creating Alerts Using Cloud Platform
- Developing IoT Prototype

#### ❖ **Module # 7 : IoT Implementations [Applications]**

- Cities
- Home
- Agriculture
- Healthcare Industry
- Transportation
- Environment
- Infrastructure
- Security



### ❖ **Module # 8 : Future & Security Concerns**

- Future Scope
- Challenges
- Security