IOT Syllabus

Unit-I Introduction to IOT

What is IoT, Genesis of IoT, IoT and Digitization, IoT Impact, Convergence of IT and IoT, IoT challenges , IoT Network Architecture and Design, Drivers behind new Network Architecture, Comparing IoT Architectures, A Simplified IoT Architecture, The core IoT Functional stack, IoT Data Management and compute stack.

Unit – II: Smart Objects

Smart Objects: The "Things" in IoT, Sensors, Actuators, and Smart Objects, Sensors Networks, Connecting Smart Objects, Communication Criteria ,IoT Access Technologies.

Unit – III :IP as the IoT Network Layer

IP as the IoT Network Layer, The Business case for IP, The need for Optimization, Optimizing IP for IoT, Profiles and Compliances ,Application Protocols for IoT, The Transport Layer, IoT Application Transport Methods, COAP and MQTT.

Unit-IV: Data and Analytics for IoT

Data and Analytics for IoT, An Introduction to Data Analytics for IoT, Machine Learning, Big Data Analytics Tools and Technology, Edge Streaming Analytics, Network Analytics, Securing IoT, A Brief History of OT Security, Common Challenges in OT Security, How IT and OT Security Practices and Systems Vary, Formal Risk Analysis Structures: OCTAVE and FAIR, The Phased Application of Security in an Operational Environment.

Unit-V: IoT Physical Devices

IoT Physical Devices and Endpoints-Arduino UNO: Introduction to Arduino, Arduino UNO, Installing the software, Fundamentals of Arduino Programming. IoT Physical Devices and Endpoints RaspberryPi: Introduction to RaspberryPi, About the RaspberryPi Board: Hardware Layout, Operating Systems on RaspberryPi, Configuring RaspberryPi, Programming , Wireless Temperature Monitoring System using Pi, Temperature Sensor, Accessing Temperature from sensors, Remote access to RaspberryPi, Smart and Connected Cities, Smart city Use-Case Examples.

INTERNET OF THINGS LAB

1 Overview of Raspberry Pi
2 Exploring the different components of Raspberry pi
3 Setting up of the board and booting the board
4 Setting up of the board and booting the board
5 Practice sessions on Python
6 Practice sessions on Python with Django
7 Sample application development using Raspberry Pi and Python
8 Sample application development using Raspberry Pi and Python
9 Designing Home Intrusion Detection – A case study
10 Project Work
11 Configuring and setting up the board for Home Intrusion Detection
12 Project Work
13 Programming Home Intrusion Detection
14 Project Work
15 Programming Home Intrusion Detection
16 Project Work
17 Programming Home Intrusion Detection
18 Project Work
19 Designing Weather Monitoring System
20 Project Work
21 Configuring and setting up the board for Weather Monitoring System
22 Project Work
23 Programming Weather Monitoring System
24 Project Work
25 Programming Weather Monitoring System
26 Project Work
27 Programming Weather Monitoring System
28 Project Work