CS/SEC/T/250: Introduction to IoT

Total Credits : 01 **Total Contact Hours : 15 Hrs.**

Maximum Marks : 50

Prerequisites: Basic knowledge of Digital Electronics and Microprocessor (Suggest to selected Computer System Architecture as minor in the III Semester)

Learning Objectives of the Course:

i) To introduce the basic concepts and applications of the Internet of Things.
ii) To familiarize students with the components and architecture of IoT systems.
iii) To provide an overview of IoT communication protocols and technologies.
iv) To encourage students to explore simple IoT-based projects or case studies.
v) To develop a foundational understanding of how IoT impacts real-world domains.

Course Outcomes (COs) :

After completion of the course, students will be able to

i) Understand the fundamental concepts and terminology of IoT.
ii) Identify the key components and architecture of IoT systems.
iii) Recognize various sensors, actuators, and communication protocols used in IoT.
iv) Appreciate the scope and applications of IoT across industries.
v) Demonstrate basic knowledge through a simple hands-on activity or mini-project.

Module No.	Topics / Actual Contents of the Syllabus	Contact Hours
I	**Introduction to IoT:** Definition, history, and evolution of IoT, Characteristics of IoT, IoT vs. traditional internet **IoT Architecture:** Four-layer architecture: Perception, Network, Processing, and Application layers, Devices, sensors, and actuators, Microcontrollers (basic overview: Arduino, ESP8266, Raspberry Pi).	05 Hrs.
II	**Communication Technologies:** Wired and wireless communication, Bluetooth, Wi-Fi, Zigbee, LoRa, and MQTT overview, Cloud platforms for IoT (intro to platforms like ThingSpeak or Blynk).	05 Hrs.
III	**Applications of IoT:** Smart homes, smart cities, healthcare, agriculture, environment, and industry, Case studies and real-world examples.	05 Hrs.

References:

1. "Internet of Things: A Hands-On Approach" – Arshdeep Bahga, Vijay Madisetti, Universities Press.
2. "Designing the Internet of Things" – Adrian McEwen, Hakim Cassimally, Wiley.
3. "Internet of Things: Architecture and Design Principles", Raj Kamal, McGraw Hill.
4. "Internet of Things: Principles and Applications"- Jivan S. Parab, Rajendra S. Gad, Chapman and Hall/CRC.