



CS – 26 FUNDAMENTALS OF IoT

Objectives:

- Understand the fundamental concepts and principles of the Internet of Things.
- Explore the architecture, components and technologies used in IoT systems.
- Learn about different communication protocols and standards for IoT.
- Gain insights into the design considerations and challenges in developing IoT solutions.
- Acquire practical skills in designing and implementing IoT systems.

Prerequisites:

- Basic knowledge of computer networks and protocols
- Familiarity with programming languages such as C / C++

| Unit No. | Topic | Detail |
|-----------------|--|---|
| 1 | Introduction to IoT | <ul style="list-style-type: none">• Introduction to the Internet of Things (IoT)• History and Evolution of IoT• Key Concepts and Definitions• Applications and Use Cases of IoT• Challenges and Opportunities in IoT |
| 2 | IoT Architecture and Technologies | <ul style="list-style-type: none">• Conceptual Framework• IoT Architecture Overview• Technology behind IoT• Sources of the IoT• M2M Communication• IoT Examples |
| 3 | Hardware for IoT | <ul style="list-style-type: none">• Sensors• Digital Sensors• Actuators• Radio Frequency Identification (RFID) Technology• Wireless sensor networks• Overview of IoT supported Hardware platforms:<ul style="list-style-type: none">○ Arduino○ Netduino |

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|-------------|--------------|
| Seminar | - 5 Lectures |
| Expert Talk | - 5 Lectures |
| Test | - 5 Lectures |

Total Lectures 30 + 15 = 45

B.C.A. (Honours) & B.C.A. (Honours with Research)
(Semester - 3 and Semester - 4)
Saurashtra University
To be effective from June – 2024



Reference Books:

- “Internet of Things (A Hands-on Approach)” b Arshdeep Bahga and Vijay Madisetti
- “Building the Internet of Things: Implement New Business Models, Disrupt Competitors, Transform Your Industry” by Maciej Kranz
- “Designing Connected Products: UX for Consumer Internet of Things” by Claire Rowland, Elizabeth Goodman, Martin Charlier, Ann Light, and Alfred Lui

Course Outcomes:

- Explain the concept and significance of the Internet of Things in various domains.
- Describe the architecture and components of IoT systems, including sensors, actuators, and communication protocols.
- Analyze different IoT communication protocols and select appropriate protocols for specific IoT applications.
- Identify design considerations and challenges in developing scalable and secure IoT solutions.