



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

<b>CS – 26 FUNDAMENTALS OF IoT</b>		
<b>Objectives:</b> <ul style="list-style-type: none"><li>• Understand the fundamental concepts and principles of the Internet of Things.</li><li>• Explore the architecture, components and technologies used in IoT systems.</li><li>• Learn about different communication protocols and standards for IoT.</li><li>• Gain insights into the design considerations and challenges in developing IoT solutions.</li><li>• Acquire practical skills in designing and implementing IoT systems.</li></ul> <b>Prerequisites:</b> <ul style="list-style-type: none"><li>• Basic knowledge of computer networks and protocols</li><li>• Familiarity with programming languages such as C / C++</li></ul>		
<b>Unit No.</b>	<b>Topic</b>	<b>Detail</b>
<b>1</b>	<b>Introduction to IoT</b>	<ul style="list-style-type: none"><li>• Introduction to the Internet of Things (IoT)</li><li>• History and Evolution of IoT</li><li>• Key Concepts and Definitions</li><li>• Applications and Use Cases of IoT</li><li>• Challenges and Opportunities in IoT</li></ul>
<b>2</b>	<b>IoT Architecture and Technologies</b>	<ul style="list-style-type: none"><li>• Conceptual Framework</li><li>• IoT Architecture Overview</li><li>• Technology behind IoT</li><li>• Sources of the IoT</li><li>• M2M Communication</li><li>• IoT Examples</li></ul>
<b>3</b>	<b>Hardware for IoT</b>	<ul style="list-style-type: none"><li>• Sensors</li><li>• Digital Sensors</li><li>• Actuators</li><li>• Radio Frequency Identification (RFID) Technology</li><li>• Wireless sensor networks</li><li>• Overview of IoT supported Hardware platforms:<ul style="list-style-type: none"><li>○ Arduino</li><li>○ Netduino</li></ul></li></ul>

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.