

Internet of Things

1.1 Course Number: CS346

1.2 Contact Hours 3-0-0 Credits: 9

1.3 Semester-offered: VI

1.4 Prerequisite: Basic programming knowledge, Computer Networks

1.5 Syllabus Committee Member:

2. **Objective:** The main aim of IoT is to unify everything in world including things, people, place and process under a common infrastructure to provide information and control of state of objects around us. The course will create an idea about IoT technology, opportunities and its future scope

3. **Course Content:**

Unit-wise distribution of content and number of lectures

Unit	Topics	Sub-topic	Lectures
1	Introduction to IoT	Defining IoT, Characteristics of IoT, Physical design of IoT, Logical design of IoT, Functional blocks of IoT, Communication models & APIs, Machine to Machine, Difference between IoT and M2M, Software define Network	6
2	Network & Communication aspects	Wireless medium access issues, MAC protocol survey, Survey routing protocols, Sensor deployment & Node discovery, Data aggregation & dissemination	10
3	Challenges in IoT	Design challenges, Development challenges, Security challenges, Other challenges	10
4	Domain specific applications of IoT	Home automation, Industry applications, Surveillance applications, Other IoT applications	4
5	Developing IoTs	Introduction to Python, Introduction to different IoT tools, Developing applications through IoT tools, Developing sensor based application through embedded system platform, Implementing IoT concepts with python	10
		Total	40

4. **Readings**

4.1 Textbook: Vijay Madiseti, Arshdeep Bahga, "Internet of Things: A Hands-On Approach"

4.2 Reference books: Walteneus Dargie,Christian Poellabauer, "Fundamentals of Wireless Sensor Networks: Theory and Practice"

5 Outcome of the Course: Students will have:

- Understand the concepts of Internet of Things
- Analyze basic protocols in wireless sensor network
- Design IoT applications in different domain and be able to analyze their performance
- Implement basic IoT applications on embedded platform