

Course Code	40119207			
Category	Core Subject			
Course Title	Internet of Things (IoT)			
Scheme and Credits	Theory	Tutorial	Lab	Credits
	1	0	4	3
Pre-requisites (if any)	Basic concept of Computer Networks must be clear with layered architecture and protocols. Types of networks with their connectivity components and constraints.			

1.Course Objectives:

1	To gain knowledge on the bases of IoT and get familiarise the concepts of IoT to apply it in different applications
2	To gain knowledge of IoT Architecture, and the Protocols related to IoT
3	To understand the concept of the Web and Internet to use it with IoT
4	To extend the understanding of web communication protocols used by IoT/ M2M devices. And illustrate the usage of messaging protocols between connected devices and the web
5	To develop the software components of IoT system using Arduino/Raspberry Pi Programming.

2. Course Contents:

Unit	Course Content	Weightage
Unit I	Introduction to Internet of Things: Definition of Internet of Things, Application Areas of IoT, Characteristics of IoT, IOT Conceptual framework, IOT Architectural view, Physical design of IOT, Logical design of IOT, IoT Challenges	20%
Unit II	Introduction to Sensors, Microcontrollers, and Their Interfacing: Introduction to Sensor: Working principle of a Sensor, Sensor interfacing, Types of Sensors, Criteria to choose a Sensor, Controlling Sensors through Webpages, Sensor data Communication Protocols, Radio Frequency Identification	20%

	Technology, Wireless Sensor Network Technology	
Unit III	Design Principles for Web Connectivity: Web Communication Protocols for connected devices, Message Communication Protocols for connected devices, SOAP, REST, HTTP Restful and Web Sockets. Internet Connectivity Principles: Internet Connectivity, Internet based communication, IP addressing in IOT, Media Access control.	20%
Unit IV	Basics of Arduino: Introduction to Arduino, Arduino IDE, Basic Commands for Arduino, LCD Commands, Serial Communication Commands, Play with LED / LCD and Arduino	20%
Unit V	Application development using Python and Arduino Python GUI with Tkinter and Arduino Data Acquisition with Python and Tkinter	20%

3. Text Books:

1. Internet of Things, Vasudevan, Nagrajan and Sundaram, Wiley India
2. Vijay Madiseti and Arshdeep Bahga, "Internet of things(A-Hand-on-Approach)" 1st Edition, Universal Press
3. INTERNET OF THINGS WITH RASPBERRY PI AND ARDUINO By Rajesh Singh, Anita Gehlot, Lovi Raj Gupta, Bhupendra Singh, and Mahendra Swain – CRC Press

4. Reference Books:

1. Rajkamal," Internet of Things", Tata McGraw Hill publication
2. 21 IoT Experiments, Yashavant Kanetkar, Shrirang Korde, BPB
3. Internet of Things with ARDUINO and BOLT, Ashwin Pajankar, BPB

5. Webliography:

1. https://www.tutorialspoint.com/internet_of_things/index.htm
2. <https://www.iotworldtoday.com/>
3. <https://aws.amazon.com/iot/>
4. https://www.cisco.com/c/en_in/solutions/internet-of-things/overview.html
5. https://www.cisco.com/c/en_in/solutions/internet-of-things/iot-network-connectivity.html

5. Accomplishment of the student after completing the course:

Able to understand building blocks of Internet of Things and characteristics, Able to understand the application areas of IOT and gain the basic knowledge about developing IoT application