Course Type	Course Code	Name of Course	L	T	P	Credit
DE	NECD554	Internet of Things	3	0	0	3

Course Objective

The internet of things, or IoT, is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

The course introduces advanced concepts and methodologies of IoT to design, build and deploy IoT solutions. It also discusses various technologies and protocols used for communication including new generation IoT-friendly applications and physical layer protocols.

Learning Outcomes

- Understanding building blocks of Internet of Things and characteristics
- Thorough understanding of widely accepted IoT frameworks and standards
- Understanding the application areas of IOT
- Building and deploying IoT solutions
- Realizing the revolution of Internet in Mobile Devices, Cloud & Sensor Networks

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	Introduction to IoT: Sensing, Actuation, Basics of Networking, Communication Protocols, Sensor Networks, Machine-to-Machine Communications.	8	• To understand the basic concepts of internetworking, sensors and actuators • To understand the concepts of sensing signal, data acquisition and transfer • To understand the basic concepts of networking and node to node communication in sensor networks
2	Interoperability in IoT, Introduction to Arduino Programming, Integration of Sensors and Actuators with Arduino.	8	• To get the exposure of hardware components and integration with sensors and communication devices
3	Introduction to Python programming, Introduction to Raspberry Pi, Implementation of IoT with Raspberry Pi, Implementation of IoT with Raspberry Pi.	9	• To develop the programming skills • To develop the programs for the implementation of tasks in different hardware devices
4	Introduction to SDN; SDN for IoT, Data Handling and Analytics, Cloud Computing.	8	• To get the exposure of future network technologies, data handling and storage
5	Sensor-Cloud; Fog Computing, Smart Cities and Smart Homes, Connected Vehicles, Smart Grid, Industrial IoT, Case Study: Agriculture, Healthcare, Activity Monitoring.	9	• To get exposure on the applications for implementing the IoT as tools.
	Total	**42**	

Text Book:

1. Pethuru Raj and Anupama C. Raman, "The Internet of Things: Enabling Technologies, Platforms, and Use Cases", CRC Press, 2017

Reference Books:

1. ArshdeepBahga and Vijay Madisetti "Internet of Things: A Hands-on Approach", Universities Press, 2014
2. Olivier Hersent, "The Internet of Things: Key Applications and Protocols", Wiley Press, 2015
3. Adrian McEwen, "Designing the Internet of Things", Wiley Publishers, 2013
4. Daniel Kellmereit, "The Silent Intelligence: The Internet of Things". 2013