

## SYLLABUS

### 23EC614: FUNDAMENTALS OF INTERNET OF THINGS

#### B Tech III Year II Sem

Course Code	Category	Hours/ Week			Credits	Maximum Marks		
		L	T	P		CIE	SEE	TOTAL
<b>23EC614</b>	<b>Open Elective</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>40</b>	<b>60</b>	<b>100</b>
<b>Contact Classes:48</b>	<b>Tutorial Classes: Nil</b>	<b>Practical Classes:-</b>			<b>Total Classes:48</b>			

#### Course Objectives: The objectives of the course are to:

- Make concepts of Internet of Things understandable to build IoT applications.
- Teach the programming and use of Arduino and Raspberry Pi boards.
- provide Knowledge about data handling and analytics in SDN

#### Course Outcomes: Upon completing this course, the students will be able to

1. Understanding and Application of IoT Concepts.
2. Proficiency in IoT Programming and Hardware Integration
3. Knowledge of Machine-to-Machine (M2M) Communications and IoT Interoperability
4. Understanding of Advanced IoT Networking Techniques
5. Application of IoT in Real-World Scenarios

#### UNIT – I

Introduction to Internet of Things, Characteristics of IoT, Physical design of IoT, Functional blocks IoT, Sensing, Actuation, Basics of Networking, Communication Protocols, Sensor Networks.

#### UNIT - II

Machine-to-Machine Communications, Difference between IoT and M2M, Interoperability in IoT, Introduction to Arduino Programming, Integration of Sensors and Actuators with Arduino.

#### UNIT – III

Introduction to Python programming, Introduction to Raspberry Pi, Interfacing Raspberry Pi with basic peripherals, Implementation of IoT with Raspberry Pi.

#### UNIT - IV

Implementation of IoT with Raspberry Pi, Introduction to Software defined Network (SDN), SDN for IoT, Data Handling and Analytics.

#### UNIT - V

Cloud Computing, Sensor-Cloud, Smart Cities and Smart Homes, Connected Vehicles, Smart Grid, Industrial IoT, Case Study: Agriculture, Healthcare, Activity Monitoring.

**TEXT BOOKS:**

1. "The Internet' of Things: Enabling Technologies, Platforms, and Use Cases", by Pethuru Raj and Anupama C. Raman (CRC Press)
2. "Make sensors": Terokarvinen, kemo, karvinen and villey valtokari, 1st edition, maker media, 2014.
3. "Internet of Things: A Hands-on Approach", by Arshdeep Bahgaand Vijay Madisetti

**REFERENCE BOOKS:**

1. Vijay Madisetti, Arshdeep Bahga, "Internet of Things: A Hands-On Approach"
2. Waltenebus Dargie, Christian Poellabauer, "Fundamentals of Wireless Sensor Networks Theory and Practice"
3. Beginning Sensor networks with Arduino and Raspberry Pi– Charles Bell, Apress,2013

