

Internet of Things	3	-	2	Fundamental of Computer Networks
<p><b>Course Objective:</b> (1) To introduce the terminology, technology and its applications  (2) To introduce the concept of M2M (machine to machine) with necessary protocols the Python Scripting Language which is used in many IoT devices  (3) To introduce the Python Scripting Language which is used in many IoT devices  (4) To introduce the Raspberry PI platform, that is widely used in IoT applications  (5) To introduce the implementation of web-based services on IoT devices</p>				
S. NO	Course Outcomes (CO)			
CO1	Understand IoT value chain structure (device, data cloud), application areas and technologies involved.			

<b>CO2</b>	Explore IoT sensors and technological challenges faced by IoT devices, with a focus on wireless, energy, power, and sensing modules
<b>CO3</b>	Explore and learn about Internet of Things with the help of preparing projects designed for Raspberry Pi.

<b>S. NO</b>	<b>Contents</b>	<b>Contact Hours</b>
<b>UNIT 1</b>	<b>Introduction to Internet of Things:</b> Definition and Characteristics of IoT, Sensors, Actuators, Physical Design of IoT – IoT Protocols, IoT communication models, IoT Communication APIs, IoT enabled Technologies – Wireless Sensor Networks, Cloud Computing, Embedded Systems, IoT Levels and Templates, Domain Specific IoTs – Home, City, Environment, Energy, Agriculture and Industry	<b>9</b>
<b>UNIT 2</b>	<b>IoT and M2M:</b> Software defined networks, network function virtualization, difference between SDN and NFV for IoT, Basics of IoT System Management with NETCONF, YANG- NETCONF, YANG, SNMP NETOPEER	<b>8</b>
<b>UNIT 3</b>	<b>IoT Physical Devices and Endpoints:</b> Introduction to Arduino and Raspberry Pi- Installation, Interfaces (serial, SPI, I2C) Controlling Hardware- Connecting LED, Buzzer, Switching High Power devices with transistors, Controlling AC Power devices with Relays, Controlling servo motor, speed control of DC Motor, unipolar and bipolar Stepper motors	<b>8</b>
<b>UNIT 4</b>	<b>Introduction to Sensors:</b> Light sensor, temperature sensor with thermistor, voltage sensor, ADC and DAC, Temperature and Humidity Sensor DHT11, Motion Detection Sensors, Wireless Bluetooth Sensors, Level Sensors, USB Sensors, Embedded Sensors, Distance Measurement with ultrasound sensor	<b>8</b>
<b>UNIT 5</b>	<b>IoT Physical Servers and Cloud Offerings:</b> Introduction to Cloud Storage models and communication APIs Web Server – Web server for IoT, Cloud for IoT, Python web application framework Designing a RESTful web API	<b>9</b>
	<b>TOTAL</b>	<b>42</b>