



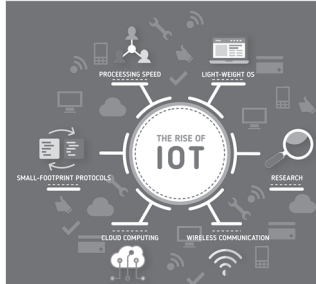
# 19IT301 INTERNET OF THINGS

Hours Per Week :

L	T	P	C
3	-	2	4

Total Hours :

L	T	P	WA/RA	SSH/HSH	CS	SA	S	BS
45	-	30	5	40	5	20	5	2



**SOURCE:**  
<https://taazaa.com/the-technologies-that-enable-the-internet-of-things/>

## COURSE DESCRIPTION AND OBJECTIVES:

Students will be explored to the concepts and applications of Internet of Things, interconnection and integration of the physical world and the cyberspace. They are also able to design & develop IOT Devices and applications.

## COURSE OUTCOMES:

Upon completion of the course, student will able to achieve the following outcomes:

COs	Course Outcomes	POs
1	Analyze the application areas of IOT	2
2	Realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks.	3
3	Analyze the building blocks of Internet of Things and characteristics.	2
4	Design and develop IoT applications for given specific problem statement	4

## SKILLS:

- ✓ *Case studies on IoT applications.*
- ✓ *Writing Python scripts for IoT circuits.*
- ✓ *Utilizing the general purpose pins of suitable IoT supported COB.*

<b>Unit- I</b>	<b>L-9</b>
<b>INTRODUCTION &amp; CONCEPTS:</b> Introduction to Internet of Things, Physical design of IOT, Logical design of IOT, IOT Enabling Technologies, IOT Levels.	
<b>Unit - II</b>	<b>L-9</b>
<b>DOMAIN SPECIFIC IOTS:</b> Home Automation, Cities, Environment, Energy, Retail, Logistics, Agriculture, Industry, Health & Life Style.	
<b>UNIT -III</b>	<b>L-9</b>
Installing Python, Python Data Types & Data Structures, Control Flow, Functions, Modules, Packages, File handling, Date/ time Operations, Classes, Python packages	
<b>UNIT - IV</b>	<b>L-9</b>
M2M & System Management with NETCONF-YANG: M2M, Difference between IOTand M2M, SDN and NFV for IOT, Software defined Networking, Network function virtualization, Need for IOT systems management, Simple network management protocol, Limitations of SNMP, Network Operator Requirements, NETCONF, YANG.	
<b>UNIT - V</b>	<b>L-9</b>
IOT Design Methodology, Case study using weather monitoring; IOT Physical Devices & Endpoints-What is an IOT Device? exemplary Device, board, Linux on Raspberry Pi, interfaces, and programming of IOT devices.	

## LABORATORY EXPERIMENTS

### LIST OF EXPERIMENTS

**TOTAL HOURS: 30**

1. a. Demonstration and study of Raspberry Pi board, GPIO Pins and familiarity of various sensors  
b. Demonstration and study of other Hardware board of IoT such as Arduino Uno and NodeMCU
2. Design and Implementation of controlling LED using Python in Raspberry Pi board.
3. Design and Implementation of sensing light through LDR using Python in Raspberry Pi board.
4. Design and Implementation of controlling LED through switch using Python in Raspberry Pi board.
5. Design and Implementation to find obstacles through sensor using Python in Raspberry Pi board.
6. Design and Implementation of sensing and display temperature using Python in Raspberry Pi board.
7. Design and Implementation of detecting noise through microphone sensor using Python in Raspberry Pi board.
8. Design and Implementation of output devices through relay using Python in Raspberry Pi board.
9. Design and Implementation of vibration sensor using Python in Raspberry Pi board.
10. Design and Implementation of uploading sensor data into cloud using Python.

### TEXT BOOK:

- 1 Vijay Madiseti, ArshdeepBahga, "Internet of Things A Hands-On- Approach", 1<sup>st</sup> edition, Orient Blackswan Private Limited, 2014.

### REFERENCE BOOKS:

1. Adrian McEwen, "Designing the Internet of Things", 1<sup>st</sup> edition, Wiley Publishers, 2013.
2. Daniel Kellmerit, "The Silent Intelligence: The Internet of Things", 1<sup>st</sup> edition, DND Ventures LLC, 2013.