# 20IT32P1 - INTERNET OF THINGS LABORATORY

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| Course Category: | Professional Core | Credits: | 1.5 |
| Course Type: | Practical | Lecture-Tutorial-Practical: | 0-0-3 |
| Prerequisite: | Python Programming and Knowledge about Linux operating system is required | Sessional Evaluation:Univ. Exam Evaluation:Total Marks: | 4060100 |
| Objectives: | * To design various simple programs using Raspberry Pi kit.
* To develop and implement applications using IoT kit
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| Course Outcomes | Upon successful completion of the course, the students will be able to: |
| CO1 | Know about the definition and characteristics of Internet of Things, Establishment of communication, connecting various devices and components to support different operating systems for application development |
| Course Content | 1. Study of Raspberry Pi kit and Installation of NOOBS
2. Writing Hello World program
3. Create a traffic light signal with three colour lights (Red, Orange and Green) with a duty cycle of 5-2-10 seconds
4. Connecting a Push Switch and toggling the switch to Raspberry Pi
5. Connecting a buzzer and touch sensor to Raspberry Pi
6. Sending SMS from a Python kit on the Raspberry Pi
7. Measuring the Humidity and Temperature using appropriate sensors (DHT22/AM2302)
8. Send email from a Linux terminal on the Raspberry Pi
9. Setting up a Web Server on Raspberry Pi
10. Setting up Wireless Access Point using Raspberry Pi
11. Controlling Raspberry Pi GPIO Pins using Telegram App
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| Components Required | 1. Raspberry Pi toolkit
2. Memory card
3. DHT22/AM2302 sensor
4. Bread board
5. Jumper cables
6. Buzzer
7. Multi colored LEDs
8. Any
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| Reference | **REFERENCE BOOKS:**1. For Telegram GPIO Experiment

<https://circuitdigest.com/microcontroller-projects/control-raspberry-pi-gpio-with-telegram>1. For Webserver on RaspberryPi

<https://thepi.io/how-to-set-up-a-web-server-on-the-raspberry-pi/>1. For configuring a Raspberry as an Access point

<https://circuitdigest.com/microcontroller-projects/setting-up-wireless-access-point-using-raspberry-pi>1. A link for good number of IoT Projects

<https://circuitdigest.com/simple-raspberry-pi-projects-for-beginners> |
| E-Resources | 1. [www.w3schools.com](http://www.w3schools.com)
2. <http://nptel.ac.in/courses>
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**CO-PO Mapping:** 3-High Mapping, 2-Moderate Mapping, 1-Low Mapping, - -Not Mapping

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|   | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| **CO1** | 3 |  | 2 |  |  |  | 3 |  |  |  | 2 |  |