

## Short Term Courses-NIELIT Delhi Centre

### Certificate Course in

### IOT (Internet of Things)USING RASPBERRY PI

#### **Course Objective:**

This course elucidates concepts related to Internet of Things. The students will get hands- on experience in working with Raspberry Pi 3 and exploring IoT.

#### **Learning Outcome:**

After completion of the course, the students will be able to understand the working of Raspberry Pi, its features and how various components can be used with Pi..

**Duration (In Hours): 40 Hours. / 4 week**

**Minimum Eligibility :**Pursuing/Passed BE/B.Tech/BCA/BSc(Electronics)

**Course Fees (INR): 2500/- + GST (18%)**

**Prerequisite:** Basic Knowledge of C or any other programming language.

### COURSE OUTLINE

Sr. No.	Module to be covered
1	Overview of IoT
2	Getting started with Raspberry Pi
3	Booting Up RPi- Operating System
4	Working with RPi using Python and Sensing Data using Python
5	Cloud Platform for IOT
6	IoT using Raspberry Pi

## **DETAILED COURSE SYLLABUS:**

### **1. Overview of IoT**

- Understanding IoT fundamentals
- Various Platforms for IoT
- Real time Examples of IoT
- Overview of IoT components and IoT Communication Technologies

### **2. Getting started with Raspberry Pi**

- Introduction to Raspberry Pi
- Comparison of various Rpi Models
- Understanding SoC architecture and SoCs used in Raspberry Pi
- Pin Description of Raspberry Pi
- On-board components of Rpi
- Projects using Raspberry Pi

### **3. Booting Up RPi- Operating System**

- Raspbian O.S.- Introduction, Tools like Leafpad Editor
- Installing Raspbian on Pi
- First boot and Basic Configuration of Pi

### **4. Working with RPi using Python and Sensing Data using Python**

- Introduction, Python.
- Understanding Python, Interpreted Languages.
- Variables, Keywords, Operators and Operands
- Data Types in Python, Importing Libraries
- Flow Control, Conditional Statement, Loops
- Sensors Interfacing- Temperature and Humidity Sensor (DHT11), Motion Sensor (PIR), Obstacle detection using Ultrasonic sensor, etc.
- Accessing on-board Wi-Fi.

### **5. Cloud Platform for IOT**

- IoT application based on Pi
- Study of IoT Cloud platforms
- ThingSpeak API

### **6. Iot Design using Raspberry Pi**

- IoT Application based on Pi
- GPIO control over Web Browser
- Using Node-RED Visual Editor on Rpi.