



Internet of Things with Raspberry Pi & NodeMCU

2 Weeks / 30 Hours

Job oriented exhaustive program

Summer Internship & Training Program

Delhi NCR – Varanasi – Bengaluru – Lucknow - Bareilly – Bhopal – Bhubaneswar – Gorakhpur

Official Partner



EISYSTEMS SERVICES

FF-113, Express Greens Plaza, Sector 1

Vaishali, Ghaziabad (Delhi NCR), Uttar Pradesh -201010

P: +91 9773976977 | E: info@eisystems.in | W: www.eisystems.in

Internship & Training Program

About EISystems

EISystems Services is a leading Indian technology identity with operations in 16 states and union territories of India. EISystems (We call it EISys) offers trainings in Machine Learning, Internet of things, Deep Learning, Computer Forensics, Automobiles, Robotics and Socialmedia related solutions for enterprises and student community. Our online edtech domain "Robokwik" have been in among top self learning products provider brands in India. We have trained about 70000 students and impacted around 2 lakhs students through our various outreach initiatives since our founding.

Our Clientele

Some of the colleges where we had already felt our presence are given below:-

Indian Institute of Science, Bangalore
Indian Institute of Technology, Bombay
Indian Institute of Technology, Delhi
Indian Institute of Technology, Madras
Indian Institute of Technology, Kanpur
Indian Institute of Technology, Roorkee
Indian Institute of Technology, Guwahati
Indian Institute of Technology (Banaras Hindu University), Varanasi
Indian Institute of Technology, Indore
Indian Institute of Technology, Bhubaneswar
Indian Institute of Technology, Jodhpur
Indian Institute of Technology, Hyderabad
National Institute of Technology, Tiruchirappalli
National Institute of Technology, Warangal
National Institute of Technology, Calicut
National Institute of Technology, Patna
National Institute of Technology, Jalandhar
National Institute of Technology, Jaipur
National Institute of Technology, Durgapur
National Institute of Technology, Surat
National Institute of Technology, Allahabad
Indian Institute of Information Technology, Allahabad
ABV- Indian Institute of Information Technology & Management, Gwalior
PDP- Indian Institute of Information Technology & Management, Jabalpur
College of Engineering Guindy,
Anna University, Chennai
PSG College of Technology, Coimbatore
JNTUH College of Engineering, Hyderabad

and more than 100 other engineering colleges.

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Prerequisites

Participants from CSE/IT/MCA/BCA/BSc IT background are eligible to join this program. This is a not a basic level program and we expect attendee to have bit knowledge of OOPs concepts and programming.

What to bring during training program?

We expect participant to come with

1. A laptop with Microsoft Windows configuration.
2. Laptop Charger/ Adapter for charging purpose.
3. USB Mouse for designing purpose (if required).

Post Training Deliverables

Every participant will get all under mentioned deliverables

1. 30 hours classroom training by specialized trainer.
2. Certificate of Internship from Eisystems Services & Technex IIT (BHU) Varanasi.
3. Printed Study Material Booklet.
4. Eisystems Access ID Card & Stylish Storage Folder.
5. Notepad & Pen.
6. Guidance for Entrepreneurship in chosen field or employment support (if asked).
7. Chance to assist our trainer in our workshop(s) at IISc, IITs, NITs etc.

Fees & Discounts

There are multiple type of discount(s) available as mentioned below:-

Category 1: Single / Individual Entry

Installments	Amount
First Installment	Rs. 1000 per participant only
Second Installment	Rs. 6900 per participant only
Total Fees	Rs. 7900 per participant only

Category 2: Group Discount (2 to 4 Members Group)

Installments	Amount
First Installment	Rs. 1000 per participant only
Second Installment	Rs. 6700 per participant only
Total Fees	Rs. 7700 per participant only

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Category 3: Access Card Discount

This discount will be valid for all aspirants having EISystems Access Card or have participated in any workshop(s) / training program (online or classroom) delivered by EISystems Services, limited seats & subject to seat availability.

Installments	Amount
First Installment	Rs. 1000 per participant only
Second Installment	Rs. 6200 per participant only
Total	Rs. 7200 per participant only

Course & Content

All of the sessions will be practical oriented, kindly look on the syllabus which we are going to cover during training days. It is to note that kit will not be provided for home takeaway purpose.

Session 1

Introduction to IoT

- What is IoT?
- Why do we need IoT?
- Definition of IoT
- Applications
- IoT Architecture

Session 2

Introduction to IoT & Components

- Sensors
- Cloud Computing
- Arduino
- Raspberry Pi
- NodeMCU

Session 3

Introduction of Arduino

- Architecture of Arduino UNO
- Introduction of AVR Microcontroller
- Interfacing I/O Devices with Arduino UNO

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Session 4

IoT Communication Protocols

- Wireless Communication Protocols
- Wired Communication Protocols
- Application Protocols-MQTT,HTTP
- Transport layer protocols TCPvs UDP
- IPv4 vs IPv6

Session 5

Serial Communication

- Introduction to Serial Communication
- RS-232 Protocol
- Associated Programming
- Controlling device using Serial Communication.

Session 6

Working with NodeMCU

- Architecture of NodeMCU
- Interfacing I/O Devices with NodeMCU
- Connecting NodeMCU with Wifi Gateway.
- Server-Client Configuration.

Session 7

IoT Demonstration Using NodeMCU

- Controlling Device using Webpage
- Sending data to Webpage
- Interfacing Temperature Sensor sending its value over local host.

Session 8

Introduction of ThingSpeak Cloud

- What is ThingSpeak?
- Architecture of ThingSpeak
- Creating Channel ,Field and API key
- Sending Sensor Data privately to Cloud.
- Analyze and visualize your data with MATLAB
- Sending Temperature of room value or any device data to ThingSpeak Cloud

Session 9

Working with Raspberry Pi

- Architecture and Hardware specifications
- Setting up RaspberryPi
- Flashing the loading the SD Card with the Operating System
- Booting the Operating System

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Session 10

Working with Raspberry Pi Demo

- Introduction of PIR Sensor
- Interfacing PIR Sensor with Arduino/Raspberry Pi
- Introduction of Ultrasonic Sensor
- Interfacing Ultrasonic Sensor with Arduino/Raspberry Pi

Session 11

Introduction to Cloud Computing

- Basic Introduction of Cloud Computing
- Storing Sensor Data on Cloud Computing
- Basic Introduction of NodeRED

Session 12

NodeRED

- NodeRed Programming Guide
- NodeRed Programming Flow
- NodeRed Flow
- Introduction of Different type of Node
- Installing NodeRED in RaspberryPi
- Accessing Raspberry GPIO using NodeRed
- Retrieve data from the web using NodeRed

Session 13

Implementation MQTT Protocol

- Introduction of MQTT Protocol
- Publish Subscribe Architecture
- Concept of Broker
- Understand working of broker, Web-Sockets demo and MQTT Phone-App
- Installing MQTT Protocol in NodeMCU
- Installing MQTT Protocol in RaspberryPi
- Controlling Devices or home Appliances using MQTT Protocol

Session 14

Demo Using Node Mcu

- Introduction to the ESP8266 WiFi Module
- MQTT and ESP8266
- Connect the ESP8266 to IBM Bluemix
- Use Cloudant DB in IBM Bluemix to Store Sensor Values
- Set Email and SMS Notifications that are Triggered by Sensor Values
- Visualize Sensor Data in IBM Bluemix
- Locate Devices on a Map
- Receive Motion Alarm Notifications in Slack

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Session 15

RaspberryPi Web Camera Interfacing

- Using a standard Raspberry Pi Webcam
- Setup a Raspberry Pi Webcam Server
- Configuring the software
- Setting up outside external access
- Sending Image on Email.

Session 16

Hands on Demonstration using Raspberry Pi

- Integrating Sensors & Reading Environmental Physical Values.
- Interfacing Temperature Sensor
- Interfacing PIR Sensor
- Interfacing Ultrasonic Sensor
- Controlling Devices using Twitter
- Raspberry Pi Web Server using Flask to Control GPIOs
- Uploading Sensor Data over cloud
- Installing Mosquitto Broker on Raspberry Pi
- Controlling Device Using Voice
- Door Status Monitoring
- Build a Night Security Light with Arduino
- Distance Measurement
- Wireless Weather Station with Data Logging to Excel
- Testing Mosquitto Broker and Client on Raspbbery Pi
- SQLite with Node-RED and Raspberry Pi
- Guide for TCS230/TCS3200 Color Sensor

Disclaimer

Please makesure that IIT (BHU) Varanasi is nowhere charging any amount from any participant and this training/internship will be organised by EISystems Services in association with Technex, an annual techno-management festival of IIT BHU Varanasi, it is to note that Technex is only responsible for providing certification to attending students and rest of the matters like marketing, operations, publicity, scheduling, payment processing, content development etc. will be taken care by EISystems Services.

All of the matters/disputes related to internship/training needs to be addressed to EISystems Services only. See our terms and conditions on www.eisystems.in/tnc.php and fees once paid is non refundable and non transferrable. Company reserves fuil right to withdraw any offer anytime without any prior notification, Also it is important to understand that center of internship in Varanasi will not be IIT (BHU) Varanasi and it will be at some other place in Varanasi itself.

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