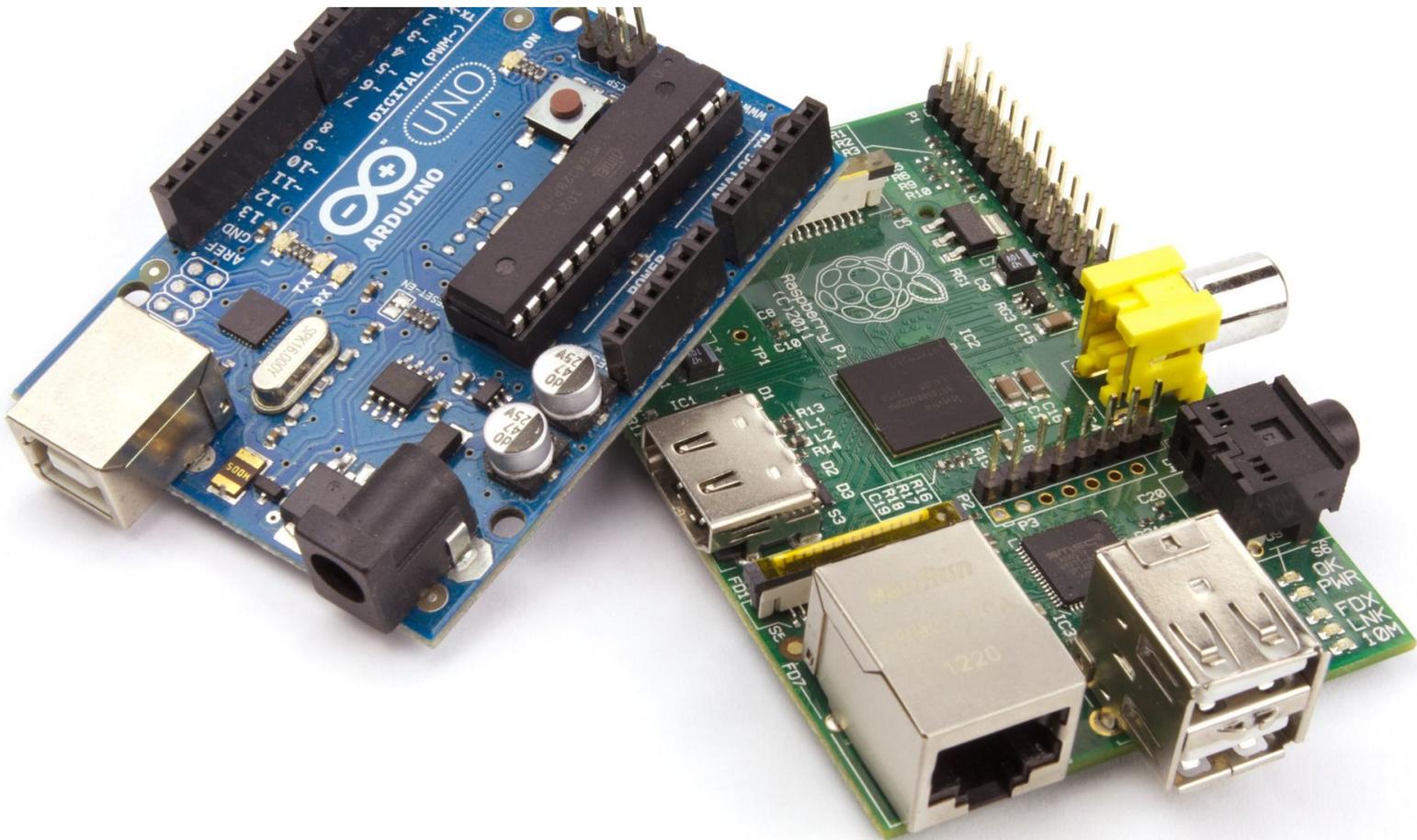# Appleton Innovations

Imagine | Innovate | Invent

Internet of Things (IoT) Internship Training

1 Month | 50+ hours |IoT Kit

Winter Internship Training on Internet of Things

Appleton Innovations is Research and Development Company with office in Visakhapatnam, Andhra Pradesh. The company has made IOT, one of its major focuses. It provides Internet of Things product development services ranging from Home Automation, Smart farming, Smart Agri and Aquaculture. We also develop custom solar power solutions for smart devices, smart cities, security, and telecoms.

- **Company of IIT Mumbai Alumni**

- **Working towards fulfilment of prestigious Make In India dream**

- **Guided by experts from IIT, TCS and Intel**

The Objectives of IOT (Internet of Things) Training:

Internet of Things or IOT in short, is the idea of making devices and objects smarter by linking them to the internet. This training program introduces you to the amazing world of IOT and its fascinating applications. Using Arduino development kit, NodeMCU and Raspberry-Pi, you will develop projects like Home Automation using IOT, Weather Station, IOT based smart irrigation controller and many other projects.

Training Highlights:

- Learn what "the Internet of Things (IoT)" means and how it relates to Cloud computing concepts
- Gain knowledge and understanding of fundamental IOT paradigms, architectures, possibilities and challenges, both with respect to software and hardware,
- A wide competence from different areas of technology, especially from computer engineering, robotics, electronics, intelligent systems.
- Learn the basics of Internet of Things and its applications.
- The basic usage of the Arduino, RaspberryPi&Nodemcu environment for creating your own embedded projects at low cost
- How open platforms allow you to store your sensor data in the Cloud
- Learn Cloud DB's such as Blynk, Thingspeak, Thinger.io, Carriots and IFTTT
- How to create your own Android App using MIT App Inventor
- The basic usage of the Arduino environment for creating your own embedded projects at low cost.
- Home automation using Bluetooth and Andriod App
- How to connect your Arduino with your Android phone.
- How to send data to the Internet and talk to the Cloud.
- How to update sensor readings on Twitter (Social Networking Sites).
- Home Automation using Google Assistant (Voice control)
- How to create your own Dash Board for sensors data visualization and device control using NODE RED
- Python, Arduino Programming, Embedded C and App development will be covered.

Internet of Things (IoT) Projects Details

During training, students develop the following projects

- Project 1: Voice Controlled Home Automation using Smartphone
- Project 2: Control RGB Led lights using App
- Project 3: Use Arduino to upload free data from Environmental Sensors to Cloud Server.
- Project 4: Automatically Tweet Sensor Data on Twitter.
- Project 5: IOT Based Smart Irrigation controller
- Project 6: Smart Applet projects based on IFTTT
- Project 7: Panic Alaram Health product using NodeMCU and IFTTT
- Project 8: Motion Sensor based Home automation
- Project 9: Smart Door Light
- Project 10: Philips Hue Light Model design
- Project 11: Notification cube for alerts
- Project 12: Controlling Home Appliances using Bluetooth and Android application
- Project 13: IoT based Plant Monitoring System
- Project 14: Simple LED control using bash commands
- Project 15: LED Blinking using Python Raspberry pi library
- Project 16: Temperature and Humidity sensing using DHT-11 sensor and Raspberry Pi
- Project 17: Motion detection using Raspberry pi
- Project 18:Sending Sensor Data to Cloud using Raspberry Pi
- Project 19: Sending emails through your Gmail account
- Project 20: Sending email alerts when Motion detected using PIR sensor
- Project 21: Home Automation GUI Application using Python and Tkinter
- Project 22: RGB led control Application using Python and Tkinter
- Project 23: Flask and Python based Web Application to control GPIO over Internet
- Project 24: Controlling LIGHTS with Node-Red dash Board
- Project 25: Sensor data visualization on Node-Red dash board
- Project 26 : Control NodeMCU using Blynk Local Server

Curriculum

Module1: Introduction to Internet of Things

- Introducing to IOT
- IOT Applications
- IOT Network Architecture
- IOT Device Architecture
- IOT Communication Protocols
- IOT Product Development Overview

Module 2: Getting Started with Arduino

- A tour of Arduino Board and Hardware: Power Supply, Power Pins, Analog and Digital Pins
- Types of Arduino Boards
- Introduction to Arduino programming

- Variables
- IF-Else conditional statements
- Loops: For, While
- Functions
- Digital Inputs and Digital Outputs
- The serial monitor
- Arrays and strings
- Using Libraries in Arduino
- Arduino data types
- Arduino Commands

Module 3: Sensors, Signals & Electronics

- Introduction to sensors and types
- Analog Sensors: Temperature, Light Sensor, Potentiometer,
- Digital Sensors: Soil Moisture sensor, Motion Sensor, DHT11 sensor, Button
- Digital Signals
- Basic electronics: resistors, capacitors, diodes, transistors and etc.,

Module 4: Actuators

- Introduction to Actuators
- Interfacing Piezo Buzzer
- Interfacing LED's
- Interfacing RGB LED's
- Interfacing Relay
- Interfacing Motor pump

Module 5: Wireless Communication Technologies

- Introduction to wireless technologies: WiFi, Bluetooth, Ethernet, LoRaWAN, WiMAX and ZigBee
- Interfacing ESP8266 WiFi Shield
- Interfacing Bluetooth Module
- Interfacing Ethernet Shield

Module 6: Basic Networking with NodeMCU

- What is NodeMCU
- Hardware overview
- Install ESP8266 Libraries
- Controlling LED with NodeMCU
- Collecting Temperature and Humidity data with NodeMCU
- Basic Wireless Networking
- WiFi Architecture and networking
- NodeMCUWiFi modes: Access Point(AP), Station (STA) and AP+STA
- WiFi Scanner using NodeMCU
- WiFi Access point without password

- WiFi Access point with password
- WiFi Client
- HTTP and REST API
- Creating Webpage Button
- Adding up required Webpage Elements
- Controlling Devices

Module7: Cloud Data Monitoring using Arduino:

- Concept & Architecture of Cloud
- Role of Cloud Computing in IoT
- Tools, API and Platform for integration of IoT devices with Cloud
- Internet of Things platforms for Arduino
- Posting the sensor data online
- Retrieving your online data
- Securing your online data
- Monitoring sensor data from a cloud dashboard
- IoT cloud platform and integration with Gateway
- Working with Thingspeak platform
- Working with Thinger.io platform
- Working with AWS IoT platform

Module 8: Smart Applets suing IFTTT

- Introduction
- Automate day to day activities through IFTTT
- Tweeting from an Arduino board
- Posting updates on Facebook
- Automation with IFTTT
- Sending push notifications
- Sending text message notifications
- Storing data on Google Drive

Module9: Getting Started with Raspberry Pi

- Introduction to Internet of things
- IOT Architecture
- Introducing the Raspberry Pi
- Hardware Basics and Architecture of Raspberry Pi
- Booting the Raspberry Pi 3
- OS Options Overview

Module10: Interfacing Hardware with the Raspberry Pi

- Raspberry Pi as PC
- Raspberry Pi Remote Access

- Bash Command-line
- Basics of electronic components
- Interfacing LED, Buzzer, Switch
- Raspberry Pi LED Blink Example
- Linux Overview and Device Drivers

Module11: Introduction to Python Programming

- Why python?
- Embedded C vs Python
- Execution Steps
- Basics of Python
- Understanding Python, Interpreted Languages
- Variables, Keywords, Operators and Operands
- Data Types in Python
- Flow Control, Condition Statement
- Loops, Importing Libraries
- Functions, Classes
- Python and Hardware Access
- LED Blinking using Python Raspberry pi library
- Temperature and Humidity sensing using DHT-11 sensor
- Motion detection using Raspberry pi
- Sending email alerts when Motion detected using PIR sensor
- Configuring web server.

Module12: GUI Development using Python and Tkinter

- Installing Tkinter
- Basics of Tkinter
- Home Automation GUI Application
- RGB led control Application

Module 13: IoT using Blynk Mobile Platform

- Installing Blynk application
- Setting up Blynk project
- Install Blynk Library
- Exploring various control widgets: Button, slider, zeRGBa, and timer
- Exploring various display widgets: Value display, Labelled value, Virtual LED Widget and Gauge Widget
- Notification widgets: Twitter, email
- Working with virtual pins
- Writing code and working with each widget
- Local Blynk Server on Raspberry Pi
- Blynk provides a simple means to tie together smartphones and IoT gadgets. In this module, we control a NodeMCU from a smartphone via a Blynk server running on Raspberry Pi.

Module 14: Node-Red: M2M and Gateway

- Install Node-Red
- Node Operations
- Install Dashboard Nodes
- Raspberry Pi GPIO Nodes
- Controlling LEDs with Node-Red
- Sensor data visualization on dash board

Module 15: Cloud Data Monitoring using Raspberry Pi:

- Tweets on twitter when a sensor is activated
- Sending emails through your Gmail account
- Post images on Social Media
- Automated Photobooth
- Initiating calls and messages using online gateways
- Logging data on to Google docs
- Working with IoT Cloud Platforms

Module16: GPIO Control using Python and Flask framework

- Intro to Internet of Things
- Intro to Flask(Python Framework)
- Installing Flask and Programming
- Controlling LED over Internet

Why Internet of Things (IOT) Training from Appleton Innovations?

- We have research and development team working in IOT,
- 25 Major Projects will be covered in this Training.
- Our syllabus is professionally designed to cover Basic as well as Advance aspects of IOT using Arduino, NodeMCU and Raspberry-Pi
- Each day of our training is well planned to provide you with Theoretical as well as Practical Knowledge of the module
- Each day will come up with New Practical& Projects which makes the training interesting and exciting.
- Time to time Practical Assignments will be provided to the students, which will help them in doing practice at home.
- Time for Project work /Ideation/concept design will be provided to the students, in which students will develop a project of their own choice. This will encourage Innovative Ideas among students.

Course Duration

- 7 days/ 15 days / 30 days (50 Hours)

Course Fee

- RS 8,850/-per participant
- To book your seat for confirmation, Registration Fee of Rs 1000 per participant to be deposited online into our bank account or offline payment at our office in advance.

Pay registration fee RS 1000 to book your seat using online or offline payment.

For Online Payment:

Pay using the online link: https://rzp.io/l/iots

For Offline Payment:

Bank A/C Number: 006005500875

Bank Account Holder Name: ALPHAPPLETON INNOVATIONS (OPC) PRIVATE LIMITED.

Bank & Branch: ICICI Bank, Dwarakanagar

IFSC Code: ICIC0000060

Course Dates

- Batch 1: 7 January 2021
- Batch 2- 18 January 2021
- Batch 3- 1 February 2021

Eligibility

The pre-requisite for joining this training is zero. Anyone who is interested for this workshop can register it. Students/faculties from all engineering branches can participate in this workshop specially **Electrical and Electronics, Electronics and Communication, Computer Science, Instrumentation, Information Technology**.

Training Certificates

- Certificate of Internship Training
- Certificate of Participation

Take Home Kit for Internet of Things Development

- Arduino Uno
- Raspberry-pi*
- USB Cable
- Breadboard (Regular)
- IoT Development Board
- Assorted Jumper Wires
- Wire Stripper*
- Screwdriver and other tools*
- DHT 11
- Relay Module

- LDR (Photo Resistor)
- Assorted LEDs
- Electronic Components
- Software tools and firmware

Participants will get take-home kit for free. Take-home kit consists of all the above items excluding the items marked with *.

Benefits
- Learn & Interact with renowned Industry Experts.
- Hands on IOT with Arduino, NodeMCU Development Board and Raspberry-Pi
- Build More than 25 Major Projects
- The Certificate of Internship and Participation

With Internship Training, Get Free IoT iLead Program Basic Membership and get following benefits

- Access Video Courses Bundle for 1 year
- Access to Advanced workshops
- Hardware Kit worth RS 2500/- (Already included in Internship Training)
- 5 Minor Projects and 5 Mini Projects
- Guaranteed Internship
- Mentorship
- Placement Assistance
- Certificate of Completion

Learn from
Appleton Innovations!
Become Industry Ready.

Contact us

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