ATS Learning Solutions

# A Course in IOT

Class Schedule*

The course will be 20% theory and 80% practical.

| Day | Topic | Practice |
|---|---|---|
| 1 | What is IOT?<br>● Learning Internet of Things<br>● Definition for Internet of Things<br>● What is IoT?<br>● How IoT is applied in different domains?<br>● Manufacturing 4.0(IIoT)<br>● Agriculture<br>● Smart City<br>● Automobile<br>● Different IoT Hardware Device<br>1. Arduino<br>2. Raspberry Pi<br>3. Node MCU<br><br>Practical<br>● Introduction To Python Programming<br>● Different type of operator & Data Structure in Python.<br>● Control statement, function and exception handling in python.<br>● Working with random module<br>● Performing HTTP GET, POST requests.<br>● Handling website re-directions. | |

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|---|---|---|
| 2 | **Data storage & Data analytics**<br>● Collecting real time data from sensor.<br>● Uploading data to local machine and cloud.<br>● Analyzing data using Matplotlib library.<br>● Integrating our twitter account and uploading data if it crosses the threshold value.<br>● Working with JSON module in python.<br>● Storing the data in local csv file for further analysis. | **Project 1**<br>**Creating and IoT based project which will analyze pollution level of different city in real time** |
| 3 | **IoT Application layer Protocol**<br>● HTTP<br>● CoAP<br>● MQTT<br>● LoRaWAN<br>● Comparison of the communication (application layer) protocols.<br>● Detail Explanation to MQTT protocol<br>1. Publishing and subscribing<br>2. Adding MQTT support to the sensor<br>3. Adding MQTT support to the actuator<br>4. Decoding and parsing content<br>5. Difference between COAP and MQTT | **Project 2**<br>**Fetching sensor data using MQTT protocol.**<br>**Project 3**<br>**Home Automation using MQTT protocol** |