DEPARTMENT OF PHYSICS
VALUE ADDED COURSE
Internet of Things (IOT)

Objective of the Course:

- This Course focuses on hands-on IoT concepts such as sensing, actuation and communication.
- It covers the development of Internet of Things (IoT) proto types-including devices for sensing, actuation, processing, and communication-to help you develop skills and experiences.
- The Internet of Things (IOT) is the next wave, world is going to witness.
- Today we live in an era of connected devices the future is of connected things.

Learning Outcome:

- After the completion of the course, the students will be able design some IOT based prototypes

UNIT-I Introduction to IOT and Logical design

Internet of Things (IoT) -Definition and characteristics of IoT-Physical Design of IoT -IoT Protocol Examples of IoT-2G / 3G / 4G mobile communications. IoT functional block - IoT communication model - IoT communication APIs.

UNIT-II IoT enabling Technologies AND Domain-specific IoT:

Wireless sensor network - Cloud computing - Big Data Analytics - Communications protocol - Embedded systems. IoT levels and Deployment Templates - IoT level 1 - IoT level 2 - IoT Level 3 - IoT Level 4- IoT Level 5 - IoT Level 6. Home Automation - Smart lighting - Smart Appliances - Intrusion Detection - Smoke / Gas Detector - Structural Health Monitoring – Surveillance - Emergency Response – Environment – Energy – Retail – logistics – Agriculture – Industry.

List of Practical:

1. LED blinking using Arduino UNO
2. IR sensor with Arduino UNO
3.Ultrasonic with Arduino UNO
4. PIR sensor with Arduino UNO
5. Gas sensor with Arduino UNO
6. Touch sensor with NodeMCU ESP8266
7. Rain sensor with NodeMCU ESP8266
8. Soil sensor with NodeMCU ESP8266
9. DHT 11 sensor with NodeMCU ESP8266
10. Water sensor with NodeMCU ESP8266

TEXT BOOK: 1. Vijay Madisetti and ArshdeepBahga, “Internet of Things: (A Hands-on Approach)”, Universities Press (INDIA) Private Limited 2014, 1st Edition.

REFERENCE BOOKS: 1. Michael Miller, “The Internet of Things: How Smart TVs, Smart Cars, Smart Homes, and Smart Cities Are Changing the World”, Pearson Education 2015.
2. Francis da Costa, “Rethinking the Internet of Things: A Scalable Approach to Connecting Everything”, Apress Publications 2013, 1st Edition.

WEB REFERENCES: https://github.com/connectIOT/iottoolkit
https://www.arduino.cc/ http://www.zettajs.org