Internet of Things (IOT) Using Arduino

Learning Outcome:

This Course will provide knowledge of Information Technology

Duration: 30 Hours. (Theory and Practical)

Course Outcomes:
- Able to understand the application areas of IOT
- Able to realize the revolution of Internet in Mobile Devices, Cloud &Sensor Networks
- Able to understand building blocks of Internet of Things and characteristics.

MODULE 1.

Introduction to IOT   **5 Hrs..**

Understanding loT fundamentals, IOT Architecture and protocols, Various Platforms for loT Real time Examples of loT, Overview of loT components and loT Communication, Technologies,   Challenges in IOT

MODULE 2.

Arduino Simulation Environment   **7 Hrs..**

Arduino Uno Architecture, Setup the IDE, Writing Arduino Software, Arduino Libraries

Basics of Embedded C programming for Arduino, Interfacing LED, push button and buzzer with Arduino, Interfacing Arduino with LCD

MODULE 3.

Sensor & Actuators with Arduino   **6 Hrs..**

Overview of Sensors working, Analog and Digital Sensors, Interfacing of Temperature, Humidity, Motion, Light and Gas Sensor with Arduino, Interfacing of Actuators with Arduino, Interfacing of Relay Switch and Servo Motor with Arduino

	J.S. University, Shikohabad Department of Information Technology	Value Added Course
		AY: 2021-22

MODULE 4.

Basic Networking with ESP8266 WiFi module   **5 Hrs..**

Basics of Wireless Networking, Introduction to ESP8266 Wi-Fi Module, Various Wi-Fi library, Web server-introduction, installation, configuration, Posting sensor(s) data to web server

MODULE 5.

IoT Protocols   **2 Hrs..**

M2M vs. IOT, Communication Protocols

MODULE 6.

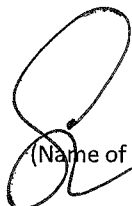**Cloud Platforms for IOT**   **5 Hrs..**

Virtualization concepts and Cloud Architecture, Cloud computing, benefits, Cloud services -- SaaS, PaaS, IaaS Cloud providers & offerings, Study of IOT Cloud platforms, Thing Speak API and MATT, Interfacing ESP8266 with Web services.

REFERENCES:

1. Peter Waher, 'Learning Internet of Things', Packt Publishing, 2015 3. Editors Ovidiu Vermesan
2. Peter Friess,'Internet of Things – From Research and Innovation to Market Deployment', River Publishers, 2014
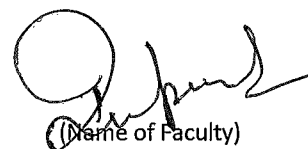3. N. Ida, Sensors, Actuators and Their Interfaces, SciTech Publishers, 2014.
4.https://www.arduino.cc/en/main/arduinoBoardUno
5.https://www.northdoor.co.uk/iot-device-action

(Name of Faculty)   (Name of Faculty)   (Name of Faculty)

Course Coordinator   Dean Academics   Director/Principle/Dean of
                                                     Faculty/Department