RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Civil Engineering, VII-Semester

Open Elective CE 703(A) Internet of Things

Course Objectives (CEO):
The course provides basic knowledge of how to connect various devices through Internet and control them remotely. It will provide methods for different types of networking and data storage.The course aims at providing communication overview and protocols for safe and secure data access and transfer and maintain confidentiality and integrity.

Unit 1:Introduction: Definition, Characteristics of IOT, IOT Conceptual framework, IOT Architectural view, Physical design of IOT, Logical design of IOT, Application of IOT.

Unit 2: Machine-to-machine (M2M), SDN (software defined networking) and NFV(network function virtualization) for IOT, data storage in IOT, IOT Cloud Based Services.

Unit 3: Design Principles for Web Connectivity: Web Communication Protocols for connected devices, Message Communication Protocols for connected devices, MQTT, CoAP, SOAP, REST, HTTP Restful and Web Sockets.
Internet Connectivity Principles: Internet Connectivity, Internet based communication, IP addressing in IOT, Media Access control.

Unit 4: Sensor Technology , Participatory Sensing, Industrial IOT and Automotive IOT , Actuator, Sensor data Communication Protocols ,Radio Frequency Identification Technology, Wireless Sensor Network Technology.

Unit 5:IOT Design methodology: Specification -Requirement, process, model, service, functional & operational view.IOT Privacy and security solutions, Raspberry Pi &arduino devices.IOT Case studies: smart city streetlights control & monitoring.

Reference Book:

1. Rajkamal,"Internet of Things", Tata McGraw Hill publication
2. Vijay Madisetti and ArshdeepBahga, "Internet of things(A-Hand-on-Approach)" 1st Edition ,Universal Press
3. Charless Bell "MySQL for the Internet of things",Apresspublicatons.
4. Francis dacosta "Rethinking the Internet otthings:A scalable Approach to connecting everything", 1st edition, Apresspublications .
5. HakimaChaouchi "The Internet of Things: Connecting Objects", Wiley publication.
6. Donald Norris"The Internet of Things: Do-It-Yourself at Home Projects for Arduino,Raspberry Pi and BeagleBone Black", McGraw Hill publication.

Course Outcomes (COs): After completion of the course the students should be able to

1. Understand in depth about Internet of things**.**
2. Establish secure communication for his network for his devices connected in IOT.
3. Store his data securely on cloud and access it when required
4. Design web based application using various internet protocols and services
5. Use sensor technology and RFID and wireless networking for maintaining privacy and security concern in smart city and housing environmental considerations.