RAMAKRISHNA MISSION VIDYAMANDIRA

CBCS Syllabus B.Sc. Computer Science Honours

Semester-VI

Credit: 6
Course Type: Discipline Specific Elective

Course Outcome:

i)   Understand general concepts of Internet of Things (IoT).
ii) Recognize various devices, sensors and applications.
iii) To be able to understand network protocols for IoT.
iv) Introduction to Cloud Computing fundamentals and its role with IoT.
v)   Apply design concept to IoT solutions.
vi) Creating IoT solutions using various platforms.

CMSA DSE T: Internet of Things

Credit: 4   **Marks: 50**

Introduction to IoT: Sensing, Actuation, Networking basics, Communication Protocols, Sensor Networks, Machine-to-Machine Communications, IoT Definition, Characteristics. IoT Functional Blocks, Physical design of IoT, Logical design of IoT, Communication models & APIs. [4]

M2M to IoT: The Vision-Introduction, From M2M to IoT, M2M towards IoT-the global context, Differing Characteristics. Definitions, M2M Value Chains, IoT Value Chains, An emerging industrial structure for IoT, [8]

IoT Reference Architecture: Getting Familiar with IoT Architecture, Basics of IoT Networking; Connectivity technologies; Various architectural views of IoT such as Functional, Information, Operational and Deployment. Constraints affecting design in IoT world-Introduction, Technical design Constraints. [15]

IoT Physical Servers and Cloud Offerings
Introduction to Cloud Storage models and communication, Cloud Computing fundamentals, Cloud Computing service model, Cloud computing management and security; APIs Web Server – Web Server for IoT, Cloud for IoT, Python web application framework. [8]

Domain specific applications of IoT: Home automation, Industry applications, Surveillance applications, Other IoT application. [5]

Developing IoT solutions: Introduction to Python for IoT, Introduction to different IoT tools, Introduction to Arduino and Raspberry Pi Implementation of IoT with Arduino and Raspberry, Cloud Computing, Fog Computing, Connected Vehicles, Data Aggregation for the IoT in Smart Cities, Privacy and Security Issues in IoT. [20]

CMSA DSE T: Internet of Things Laboratory

Credit: 2   **Marks: 25**

Introduction to various sensors and various actuators & its Application. [15 L]

 Perform Experiment using Arduino Uno to measure the distance of any object using Ultrasonic Sensor. [15 L]

Demonstration with Arduino and introduction to its functionalities. [10 L]

Recommended Books:

1. Designing The Internet of Things by McEwen, Cassimally; Wiley.
2. The Internet of Things: Key Applications and Protocols by Hersent, Wiley.
3. Cloud Computing by Rajkumar Buyya; 1st Edition; Wiley.