

SREENIVASA INSTITUTE of TECHNOLOGY and MANAGEMENT STUDIES

III MCA - I Semester

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INTERNET OF THINGS

Course Objectives:

- To understand the basics of Internet of Things
- To get an idea of some of the application areas where Internet of Things can be applied
- To understand the middleware for Internet of Things
- To understand the concepts of Web of Things
- To understand the IOT protocols

UNIT I: Introduction

Introduction, Background and Initial Visions - Definitions and Functional Requirements – Opportunities and Motivation – A Possible Architecture for the Future Internet of Things- IoT: A Web 3.0 View - **Four Pillars of IoT** - The Horizontal, Verticals, and Four Pillars M2M: The Internet of Devices ,RFID: The Internet of Objects, WSN: The Internet of Transducers. SCADA: The Internet of Controllers.

The DNA of IoT - DCM: Device, Connect, and Manage, Device: Things that Talk, Connect: Via Pervasive Networks, Wired Networks, Wireless Networks Satellite IoT Manage: To Create New Business Value,

UNIT II: IoT Middleware and Protocols

Middleware For IoT - Overview of Middleware, Communication Middleware for IoT- MTC/M2M Middleware, SCADA Middleware , RFID Middleware, WSN Middleware.

Protocol Standards for IoT - IoT Protocol Standardization Efforts- M2M and WSN Protocols, SCADA and RFID Protocols, Issues with IoT Standardization, Unified Data Standards: A Challenging Task, Unified Identification of Objects.

UNIT III: Web of Things

Web of Things versus Internet of Things - Two Pillars of the Web-**Architecture standardization for WoT** - Platform Middleware for WoT - Standards for M2M, Frameworks for WSN, Standards for SCADA, Extensions on RFID Standards- Unified Multitier WoT Architecture, SOA/EAI versus SODA/MAI, OSGi: The Universal Middleware, WoT Framework Based on Data Standards- WoT Portals and Business Intelligence, Challenges of IoT Information Security.

UNIT IV: Integrated

Integrated Billing Solutions in the Internet of Things - Cost of RFID and the Internet of Things, Benefits of RFID and the Internet of Things, Cost Benefit Sharing, A Technical Framework for Integrating Billing Capabilities into the EPC global Network- Business Models for the Internet of Things-Business Models and Business Model Innovation- Value Creation in the Internet of Things -Exemplary Business Model Scenarios for the Internet of Things - Product as a Service (PaaS), Information Service Provider, End-user Involvement, Right-time Business Analysis and Decision making.

UNIT V: Applications

Ubiquitous IoT Applications - A Panoramic View of IoT Applications - Important Vertical Applications- Telematics and Intelligent Transport Systems, Smart Grid and Electric Vehicles , Smarter Planet and Smart Buildings- Using Internet of Things Concepts to Provide High Interoperability for Logistics Systems - Semantic Web- Ontology - Ontology and the Organizational Perspective,

Ontology and the IT-System Perspective, Ontology and the Data Perspective, Ontologies in Multi-agent Systems, The Role of a Top-level Ontology

Course Outcomes:

- Identify and design the new models for market strategic interaction
- Design business intelligence and information security for WoB
- Analyze various protocols for IoT
- Design a middleware for IoT

TEXT BOOKS:

1. The Internet of Things in the Cloud: A Middleware Perspective - Honbo Zhou – CRC Press – 2012
2. Architecting the Internet of Things - Dieter Uckelmann; Mark Harrison; Florian Michahelles- (Eds.) – Springer – 2011

REFERENCE BOOKS:

1. 1.Networks, Crowds, and Markets: Reasoning About a Highly Connected World - David Easley and Jon Kleinberg, Cambridge University Press - 2010
2. The Internet of Things: Applications to the Smart Grid and Building Automation by - Olivier
3. Hersent, Omar Elloumi and David Boswarthick - Wiley -2012
4. 3.. Olivier Hersent, David Boswarthick, Omar Elloumi , “The Internet of Things – Key applications and Protocols”, Wiley, 2012