

Course code	Course Name	L-T-P -Credits	Year of Introduction
EE 472	Internet of Things	3-0-0-3	2016

Prerequisite : NIL

Course Objectives

- Vision and Introduction to IoT.
- Understand IoT Market perspective.
- Data and Knowledge Management and use of Devices in IoT Technology.
- Understand State of the Art – IoT Architecture.
- Understand Real World IoT Design Constraints, Industrial Automation and Commercial Building Automation in IoT.

Syllabus

Internet in general and Internet of Things, IoT Technology Fundamentals, Communication Technology for IoT, Data Management, Sensors and security of IoT, Standardisation and Protocol, IoT architectures, Embedded design for IoT, Case Studies and smart applications

Expected outcome.

- i. Explain in a concise manner how the general Internet as well as Internet of Things work.
- ii. Understand constraints and opportunities of wireless and mobile networks for Internet of Things.
- iii. Use basic sensing and measurement and tools to determine the real-time performance of network of devices
- iv. Develop prototype models for various applications using IoT technology

Text Books:

1. Rajkamal, “Internet of Things : Architecture and Design Principles”, McGraw Hill (India) Private Limited.
2. Vijay Madiseti and Arshdeep Bahga, “Internet of Things (A Hands-on-Approach)”, 1stEdition, VPT, 2014

References:

1. The Internet of Things (The MIT Press Essential Knowledge series) Paperback – March 20, 2015 by Samuel Greengard
2. The Internet of Things : Converging Technologies for Smart Environments and Integrated Ecosystems, Ovidu Vermesan and Peter Friess, River Publishers.
3. Internet of Things - From Research and Innovation to Market Deployment - RIVER PUBLISHERS , PETER FRIESS , OVIDIU VERMESAN (Editors)

Course Plan

Module	Contents	Hours	Sem. Exam Marks
I	Introduction : Definition , Internet of Things IoT Architectural view, IoT Technology M2M Communication, Success Factors of Internet of Things, IoT Application Areas , IoT Functional View, Design Principles for connected Devices, Communication Technologies	6	15%
II	IoT Data Management, Device Management Gateways, Design Principles for Web Connectivity, Web communication protocols for connected devices, Web connectivity for connected devices using Gateways- Internet connectivity Principles – Internet based communication, IP addressing in the IoT	8	15%

FIRST INTERNAL EXAMINATION			
III	Data acquiring and storage for IoT devices, Organization of Data, Big data, Acquiring methods, management techniques, Analytics, Storage technologies. Cloud computing for Data storage (concept only)	8	15%
IV	Sensor Technologies for IoT Devices, Industrial IoT and Automotive IoT, Actuators for various devices, Sensor data communication protocols, Wireless Sensor network Topology	8	15%
SECOND INTERNAL EXAMINATION			
V	Prototyping concepts, Basics of Embedded computing, Embedded platforms for prototyping, Iot Connected devices through Cloud Designing software for IoT, Prototyping embedded device software	8	20%
VI	Case Study& Advanced IoT Applications: Sensors and sensor Node and interfacing using any Embedded target boards (Raspberry Pi / ARM Cortex/ Arduino)- Block diagram, specifications. Internet of Things SMART Applications : Energy management and Smart grid, IoT for Home ,Cities , Environment monitoring, Agriculture, Supply chain and customer monitoring	8	20%
END SEMESTER EXAM			

QUESTION PAPER PATTERN (End Sem Exam)

Maximum Marks: 100

Exam Duration: 3Hrs.

Part A: 8 questions.

One question from each module of Module I - IV; and two each from Module V & VI.

Student has to answer all questions. (8 x 5)=40

Part B: 3 questions from modules I & II with at least one question from each module. Student has to answer any 2 from the 3 questions: (2 x 10)=20

Part C: 3 questions from modules III & IV with at least one question from each module. Student has to answer any 2 from the 3 questions: (2 x 10) =20

Part D: 3 questions from modules V & VI with at least one question from each module. Student has to answer any 2 from the 3 questions: (2 x 10) =20