

COURSE CODE	COURSE TITLE	L	T	P	C
1152IT110	Internet of Things	3	0	0	3

Course Category:

~~Foundation (0) / Program Core (1) / Program Elective (2) / Allied Elective (3) / University Elective (4) / Value Education Elective (5) / Independent Learning (6) / Industry – Higher Learning Institute Interaction (7)~~

a.Preamble:

The Internet of Things (IoT) has been called the next Industrial Revolution — it will change the way all businesses, governments, and consumers interact with the physical world.

b. Pre-requisites:

Sl. No	Course Code	Course Name
1		Computer Networks

c. Related Courses:

Sl. No	Course Code	Course Name
1		IT Infrastructure Management
2		Android Application Development
3		Project Work

d. Course Educational Objectives:

Students undergoing this course are expected to

- 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 concepts of Cloud of Things with emphasis on Mobile cloud computing
- To understand the IOT protocols

e. Course Outcomes:

CONos	Course Outcomes	Level of learning domain(Based on revised Bloom's taxonomy)
CO1	Identify and design the new models for market strategic interaction.	K2
CO2	Analyze various protocols for IoT.	K2
CO3	Design business intelligence and information security for Web of Things.	K2
CO4	Design a middleware for IoT.	K2
CO5	Analyze and design different models for network dynamics.	K3

f. Correlation of COs with Program Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	M	L	L								
CO2			M	L	L							
CO3		M	M	M		L						
CO4		M	M	M	L	H						
CO5			M	L	M		L					

H- High; M-Medium; L-Low

g. Course Content:

UNIT I INTRODUCTION

10

Definitions and Functional Requirements –Motivation – Architecture - Web 3.0 View of IoT–biquitousIoT Applications – Four Pillars of IoT – DNA of IoT - The Toolkit Approach for End-user-Participation in the Internet of Things. Middleware for IoT: Overview – Communication middleware forIoT –IoT Information Security.

UNIT II IOT PROTOCOLS

8

Protocol Standardization for IoT – Efforts – M2M and WSN Protocols – SCADA and RFID Protocols –Issues with IoT Standardization – Unified Data Standards – Protocols – IEEE 802.15.4 – BACNetProtocol – Modbus – KNX – Zigbee Architecture – Network layer – APS layer – Security.

UNIT III WEB OF THINGS

10

Web of Things versus Internet of Things – Two Pillars of the Web – Architecture Standardization forWoT– Platform Middleware for WoT – Unified Multitier WoT Architecture – WoT Portals and BusinessIntelligence. Cloud of Things: Grid/SOA and Cloud Computing – Cloud Middleware – Cloud Standards– Cloud Providers and Systems – Mobile Cloud Computing – The Cloud of Things Architecture.

UNIT IV INTEGRATED

9

Integrated Billing Solutions in the Internet of Things Business Models for the Internet of Things -Network Dynamics: Population Models – Information Cascades - Network Effects – NetworkDynamics: Structural Models - Cascading Behavior in Networks - The Small-World Phenomenon.

UNIT V APPLICATIONS

8

The Role of the Internet of Things for Increased Autonomy and Agility in Collaborative ProductionEnvironments - Resource Management in the Internet of Things: Clustering, Synchronisation andSoftware Agents. Applications - Smart Grid – Electrical Vehicle Charging.

TOTAL: 45 Periods

h. Learning Resources

i. 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.