ITA6010	Internet of Things	L	T	P	J	C
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Pre-requisite	**ITA5003**	**Syllabus version**				
		v. 1.0				

Course Objectives:

1. Exploring the characteristics of Internet of things and its design.
2. Defining the communication model with cloud environment.
3. Extrapolating the design thinking skills to new IoT based prototypes for real life applications.

Expected Course Outcomes:

1. Design the logical and physical structure of Internet of Things.
2. Develop the communication system and protocol in implementing Internet of Things.
3. Define the virtualization for Internet of things.
4. Configuration of IOT devices.
5. Design functional model specification for Internet of Things based on domain specification.
6. Develop an Internet of Things application based on domain specification and real time applications.
7. Perform interactive product development using IoT technologies.

Student Learning Outcomes (SLO)	**2, 6, 18**

Module:1	**Introduction to IoT**	**6 hours**

Definition and Characteristics, Physical Design of IoT, Logical Design of IoT, IoT Enabling Technologies.

Module:2	**M2M and IoT**	**6 hours**

Introduction to M2M**,** Difference between IoT and M2M, SDN and NFV for IoT.

Module:3	**IoT Protocols**	**8 hours**

IEEE 802.15.4, BACNet Protocol, Modbus, KNX, Zigbee Architecture, 6LoWPAN, RPL

Module:4	**Developing Internet of Things**	**6 hours**

IoT Platforms Design Methodology, Python packages of Interest for IoT, IoT Physical Devices and Endpoints

Module:5	**IoT and Cloud**	**5 hours**

IoT Physical Servers and Cloud Offerings, IoTTools:Chef,Puppet

Module:6	**Data Analytics for IoT**	**7 hours**

Big Data Platforms for the IoT, Hadoop Map Reduce for Batch Data Analysis, Apache Oozie Workflows for IoT Data Analysis, In-Memory Analytics using Apache Spark, Apache Storm

for Real Time Data Analysis, Sustainability Data and Analytics in Cloud based M2M Systems, Fog Computing: A Platform for IoT and Analytics		
Module:7	**Domain Specific IoTs**	**5 hours**
Home Automation, Cities, Environment, Energy, Retail, Logistics, Agriculture, Industry, Health and Lifestyle, Virtual Reality Internet Advertising, Intelligent Transportation Systems, Health Information System: Genomics Driven Wellness Tracking and Management System(Go-WELL)		
Module:8	**Contemporary issues**	**2 hours**
Expert Talk		
	Total Lecture Hours:	**45 hours**

Text Book(s)	
1.	ArshdeepBahga, Vijay Madisetti, Internet of Things: A Hands-on Approach, 2015, 1st Edition, Universities Press.
Reference Books	
1.	Olivier Hersent, David Boswarthick, Omar Elloumi, The Internet of Things – Key applications and Protocols, 2012, Wiley Publication.
2.	Honbo Zhou, The Internet of Things in the Cloud: A Middleware Perspective, 2012, CRC Press.
3.	Dieter Uckelmann; Mark Harrison; Florian MichahellesArchitecting the Internet of Things, 2011, Springer.

Recommended by Board of Studies	05-03-2016		
Approved by Academic Council	40th	Date	18-03-2016