

Course code	Course Name	L-T-P - Credits	Year of Introduction
IT462	Internet of things	3-0-0-3	2016
Prerequisite: Nil			
Course Objectives - To explore the world of current technologies. - To understand with the concepts of internet of things. - To get a knowledge basics in the history and developments of internet. - To be familiar with the big data and cloud in the IoT basis.			
Syllabus Internet: An Overview, Internet Technology, Internet Communication Technologies, Current trends in Internet: Internet of everything , Cloud Technology, Scalable Computing, Models of distributed and cloud computing , Performance and Security, Internet of Things, Smart Technology, IoT Components, Prototyping in IoT, Big Data, Big Data versus IoT, Combined applications.			
Expected outcome . The student will understand the basics of internet, the concepts of internet of things, cloud and big data.			
Text Books: - Anthony Townsend., Smart cities: big data, civic hackers, and the quest for a new utopia, WW Norton & Company, 2013 - Arshdeep Bahga, Vijay Madisetti, , Internet of things: a hands-on approach, CreateSpace Independent Publishing Platform, 2013. - Dieter Uckelmann, Mark Harrison, Michahelles Florian (Ed.), Architecting the internet of things, Springer, 2011 - Dr. Ovidiu Vermesan, Dr Peter Friess, Internet of Things: Converging Technologies for Smart Environments and Integrated Ecosystems, River Publishers, 2013 - Olivier Hersent, David Boswarthick, Omar Elloumi The internet of things: key applications and protocols, Wiley, 2012.			
References: - Adrian McEwen, Hakim Cassimally, Designing internet of things, John Wiley & Sons, 2013 . - Charalampos, Doukas, Building Internet of things with the Arduino, Creat space . - Rob Faludi, Building wireless sensor networks, O'Reilly. - Cuno Pfister, Getting started with the internet of things, Maker Media, Inc., 2011 .			
Course Plan			
Module	Contents	Hours	Sem. Exam Marks
I	Internet: An Overview: Introduction, History of Internet, Internet Technology, Basics of Internet, Classification of Internet, Topologies, Applications, Internet of Things and Related Future Internet Technologies, Internet of Things Vision, Towards the IoT Universe(s), The Internet of Things Today.	5	15%
II	Internet Communication Technologies, Networks and Communication , Processes , Data Management , IoT Related Standardization , Protocol, Communication protocols, Types of communication protocols, Addressing Schemes, M2M Service Layer Standardisation, OGC Sensor Web for IoT, IEEE and IETF,	8	15%

	ITU-T, Current trends in Internet: Internet of everything, Internet of everything, Internet of things, Storage, Databases.		
FIRST INTERNAL EXAMINATION			
III	Cloud Technology: Introduction, Overview, Why cloud ? , How to implement cloud ? , Usage of cloud, Scalable Computing, Cloud computing, Characteristics of cloud computing, Classifications, Virtual machines, Virtualization technology, Models of distributed and cloud computing, Distributed computing, Clustering, Grid computing, Service oriented Architecture. Performance and Security, Performance analysis, Security, Implementations of Cloud computing.	8	15%
IV	Internet of Things: IoT : An overview, Introduction, Characteristics, IoT technology, IoT as a Network of Networks, IoT architecture, IoT developments, Smart Technology, Brief introduction of smart technology, Smart devices, Smart environment. IoT Components, Basic Principles, Embedded technology Vs IoT, Sensors, Wireless sensor networks, Aurdino, Rasberry Pi.	7	15%
SECOND INTERNAL EXAMINATION			
V	Prototyping in IoT, Basics of prototypes, Prototyping in IoT, Communication in IoT, Prototyping model, Data handling in IoT, fabryq, Bluetooth Low Energy, µfabryq, Operating Systems for Low-End IoT Devices, Open Source Oss, Contiki, RIOT, FreeRTOS, TinyOS, OpenWSN, nuttX, eCos, mbedOS, L4 microkernel family, uClinux, Android and Brillo, Other open source OS, Closed Source Oss, ThreadX, QNX, VxWorks, Wind River Rocket, PikeOS, emboss, Nucleus RTOS, Sciopta, µC/OS-II and µC/OS-III.	7	20%
VI	Big Data, BigData versus IoT, BigData influcement in IoT, A cyclic model of BigData, Cloud and Internet of Things, Data Storage, Analysis and Communication, Classifications, Characteristics of BigData, Types of BigData, Analysing of Data, Applications, Real time situations, BigData tools, A combined application of IoT , Cloud and BigData in IoT.	7	20%
END SEMESTER EXAM			

QUESTION PAPER PATTERN

Maximum Marks: 100

Exam Duration: 3 hours

The question paper shall consist of Part A, Part B and Part C.

Part A shall consist of three questions of 15 marks each uniformly covering Modules I and II. The student has to answer any two questions (15×2=30 marks).

Part B shall consist of three questions of 15 marks each uniformly covering Modules III and IV. The student has to answer any two questions (15×2=30 marks).

Part C shall consist of three questions of 20 marks each uniformly covering Modules V and VI. The student has to answer any two questions (20×2=40 marks).

Note : Each question can have a maximum of 4 subparts, if needed