IT458: INTERNET OF THINGS
CREDITS = 5 (L=3, T=0, P=2)

Course Objective:

To develop Secure IoT application using wireless Sensor Technology.

Teaching and Assessment Scheme:

Teaching Scheme			Credits	Assessment Scheme				Total Marks
				Theory		Practical		
L	T	P	C	ESE	CE	ESE	CE	
3	0	2	5	70	30	30	20	150

Course Contents:

Unit No.	Topics	Teaching Hours
1	**Introduction:** Overview of IoT, Examples of IoT Applications, Internet of Things Frameworks: IoT Definitions, IoT Architecture, Work flow, ITU-T Views, Working Definition, IoT Frameworks, Basic Nodal Capabilities.	05
2	**IoT Mechanisms And Key Technologies:** Identification of IoT Objects and Services, Structural Aspects of the IoT, Environment Characteristics, Traffic Characteristics, Scalability, Interoperability, Security and Privacy, Open Architecture, Key IoT Technologies, Device Intelligence, Communication Capabilities, Mobility Support, Device Power, Sensor Technology, RFID Technology, Satellite Technology.	07
3	**RFID Technology:** Introduction, Principle of RFID, Components of an RFID system, Issues EPC Global Architecture Framework: EPCIS & ONS, Design issues, Technological challenges, Security challenges, IP for IoT, Web of Things.	05
4	**Wireless Sensor Networks:** Overview of WSN, WSN Architecture, the node, Connecting nodes, Networking Nodes, Securing Communication WSN specific IoT applications, challenges: Security, QoS, Configuration, Various integration approaches, Data link layer protocols, routing protocols and infrastructure establishment.	07
5	**Business Models For The Internet of Things:** Business Models and Business Model Innovation, Value Creation in the Internet of Things, Business Model Scenarios for the Internet of Things, Internet of Things	08

	Application: Smart Metering Advanced Metering Infrastructure, e-Health Body Area Networks, City Automation, Automotive Applications, Home Automation, Smart Cards.	
6	**Internet of Things Privacy, Security And Governance:** Overview of Governance, Privacy and Security Issues, Vulnerabilities of IoT, Contribution from FP7 Projects, Security-Privacy and Trust in IoT-Data-Platforms for Smart Cities, Data Aggregation for the IoT in Smart Cities, Security.	07
7	**Data Analytics & Advance IOT:** Tools in IOT, Data Analytics in IOT, IOT Physical Systems, Interoperability in IOT, Cloud Computing, Fog Computing, Connected Vehicles, Industrial IOT.	6
	TOTAL	**45**

List of References:

1. Pethuru Raj and Anupama C. Raman ,*"The Internet of Things: Enabling Technologies, Platforms, and Use Cases"*, CRC Press Publisher
2. Bernd Scholz-Reiter, Florian Michahelles*, "Architecting the Internet of Things",* Springer Publication (e-ISBN 978-3-642-19157-2).
3. Francis daCosta , *"Rethinking the Internet of Things: A Scalable Approach to Connecting Everything"*, Apress Publications, 2013
4. Cuno Pfister , *"Getting Started with the Internet of Things"*, O"Reilly Media, 2011

Course Outcomes (COs):

At the end of this course students will be able to …

1. Understand IoT framework, architecture and working model.
2. Understand key technologies and characteristics of Internet of things.
3. Developing various sensor based applications using wireless sensor modules and RFID.
4. Exploring the features of predictive data analytics for IoT applications.
5. Understand security and privacy issues of IoT environment.
6. Integrate IoT system in cloud computing and fog computing.