

Branch Name:	Computer Engineering (Software Engineering)
Program Code:	ET203
Course Title:	IOT - Internet Of Things
Course Code:	2ET2030208T
Pre-requisite Course:	Fundamentals of Computer Networking and Embedded Systems.

Course Objectives: The Internet of Thing (IoT) network allows the things to communicate with each other in order to make the human life easy. Communication could be machine 2 machine or machine 2 men. After completion of this course students would be able to understand the building block, protocols and application areas of IoT. Understand what IoT technologies are used for today, what will be used in future. Realize the uprising of Internet in Mobile Devices, Cloud & Sensor Networks. Recognize challenges and research areas of IoT.

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								Total (Marks)
					Theory (Marks)				Practical (Marks)				
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
3	3	-	-	3	24	60	16	40	-	-	-	-	100

Course Contents:

Unit No	Topics	Total Hours	Weightage (%)
1	INTRODUCTION TO IOT Definitions and Functional Requirements, Motivation, Architecture - Web 3.0 View of IoT, IoT 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 for IoT –IoT Information Security	07	29
2	IOT PROTOCOLS IoT protocol Stack - M2M and WSN Protocols – SCADA and RFID Protocols – Issues with IoT Standardization – Unified Data Standards – Protocols – IEEE 802.15.4 – BACNet Protocol – IoT gateway Protocols - Modbus and MQTT – ZigBee Architecture –Bluetooth low energy Protocol -	07	29
3	TECHNIQUES FOR WRITING EMBEDDED CODE Memory management for IoT devices- Types of memory– Performance and Battery Life of IoT enabled Embedded Devices – Libraries to write Embedded Code – Debugging	06	25
4	IoT SECURITY Importance of Security in IoT – Security Services - IoT Security Vs Traditional Network Security – IoT Security Issues – Privacy – Integrity – Availability Issues – Solutions	04	17

Reference 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
3. Networks, Crowds, and Markets: Reasoning About a Highly Connected World - David Easley and Jon Kleinberg, Cambridge University Press – 2010
4. Designing the Internet of Things - Adrian McEwen, Hakim Cassimally

Course Learning Outcomes (CLO):

Course Outcomes	Description	Bloom's Taxonomy Level
COL1	Identify and design the new models for market strategic interaction	Understanding (1) Applying (1)
COL2	Design business intelligence and information security for IoT, analyze various protocols for IoT	Applying (3)
COL3	Design prototype and develop embedded code for IoT, Analyze and design different models for network dynamics	Applying (3)

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	H	M	M		M											
CLO2	H	M			M							L				
CLO3	H	M	M		M											
CLO4	M	M	M		M							L				
CLO5	M	M										L				

H: High, M: Medium, L: Low