Course Code	Course Title	L	T	P	C
BCSE401L	Internet of Things	3	0	0	3
Pre-requisite	NIL	Syllabus version			
		1.0			

Course Objectives

1. To apprise students with basic knowledge of IoT that paves a platform to understand physical, logical design
2. To teach a student how to analyze requirements of various communication models and protocols.
3. To analyze IoT application and deploy for real-time scenario.
4. To understand the advanced computing technology of IoT using Fog Computing

Course Outcomes

1. Describe layers of IoT and IoT devices used for various applications.
2. Understand the standards, protocols and communication models of IoT
3. Comprehend advanced IoT applications and technologies from the basics of IoT.
4. Understand working principles of various sensor for different IoT platforms.
5. Understand the challenges of IoT using privacy and security metrics
6. Solve real-time problems and demonstrate IoT applications in various domains using prototype models

Module:1	**Things & Internet**	**6 hours**
Introduction, Things: About sensors & actuators, Internet: Devices at Different Layers, IPv4 Addresses, IPv6Addresses, Interior Gateway Routing Protocol, Exterior Gateway Routing Protocol		
Module:2	**Standards and Protocols**	**7 hours**
IEEE 802.11, IEEE 802.15.4, LoRaWAN,6LowPAN, Application Protocols		
Module:3	**Things Data Analytics**	**6 hours**
Supervised Learning, Unsupervised Learning, Bias and Variance Tradeoff, Artificial Neural Networks, Evaluation Method		
Module:4	**Privacy and Security of Things Data**	**8 hours**
Data Privacy, Elliptic Curve Cryptography, Blockchain		
Module:5	**Smart Device Localization, Clustering and Data Fusion**	**8 hours**
Distance-based Localization Methods, Distance-free Localization Methods, clustering Technique, Sensor Data Fusion		
Module:6	**Fog Computing**	**5 hours**
Introduction, Technologies for Fog Computing, Mobility in Fog Framework, Fog Orchestration		
Module:7	**Applications of IoT**	**3 hours**
Introduction, Smart Healthcare, Smart City		
Module:8	**Recent Trends**	**2 hours**
Guest lectures from Industry and, Research and Development Organizations		
	Total Lecture hours:	**45 hours**

Text Book(s)

1. Sudhir Kumar, Fundamentals of Internet of Things,1st edition, 2022

2.	John Davies, Carolina Fortuna, The Internet of Things: From Data to Insight, 6 March 2020.
Reference Books	
1.	Ryan Betts, Architecting for the Internet of Things, Published by O'Reilly Media, Inc.,2016
2.	Rajkumar Buyya (Editor), Amir VahidDastjerdi, Internet of Things: Principles and Paradigms 1st edition By Morgan Kaufmann ,2016
Mode of Evaluation: CAT, written assignment , Quiz, FAT	

Recommended by Board of Studies	12-05-2023		
Approved by Academic Council	No. 70	Date	24-06-2023