University Order No. ACAD/ACM/2024/Appr/1447 dated 03/12/2024 Approved by Academic Council Meeting held on 26/12/2025 - Page 345

KU6SECSC311: INTERNET OF THINGS

Semester	Course Type	Course Level	Course Code	Credits	Total Hours
6	DSE	300-399	**KU6DSECSC311**	4	60

Learning Approach (Hours/ Week)			Marks Distribution			Duration of ESE (Hours)
Lecture	Practical/ Internship	Tutorial	CE	ESE	Total	
4	-	-	30	70	100	2hrs.

Course Description:

This Course focuses on hands-on IoT concepts such as sensing, actuation and communication. It covers the development of Internet of Things (IoT) prototypes—including devices for sensing, actuation, processing, and communication and applications of IoT that helps to develop skills and experiences.

Prerequisite: NIL

Course Outcomes:

CO No.	Expected Outcome	Learning Domains

1	Understand the various concepts, terminologies and architecture of IoT systems..	U
2	Identify the use of sensors and actuators to design IoT	U/A
3	Understand and apply various protocols for design of IoT systems	U/A
4	Understand various applications of IoT	U/An

**Remember (R), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C)*

Mapping of Course Outcomes to PSOs

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	3						2
CO 2	3	2		2			2
CO 3	3	2		3			2
CO 4	3			3			3

COURSE CONTENTS

Contents for Classroom Transaction:

MODULE	UNIT	DESCRIPTION	HOURS
1	**MODULE TITLE**: Fundamentals of IoT		12
	1	Introduction, Definitions & Characteristics of IoT	
	2	IoT Architectures, Physical & Logical Design of IoT	
	3	Enabling Technologies in IoT, Historyof IoT, About Things in IoT	
	4	The Identifiers in IoT- About the Internet in IoT	
	5	IoT frameworks, IoT and M2M.	
2	**MODULE TITLE:** Sensors Networks		12
	1	Definition, Types of Sensors, Types of Actuators, Examples and Working,	

	2	Development Boards: Arduino IDE and Board Types, RaspberriPi- IoT Development Kit, RFID Principles and components,	
	3	Wireless Sensor Networks: History and Context, The node, Connecting nodes,	
	4	Networking Nodes, WSN and IoT.	

3	**MODULE TITLE :** Wireless Technologies for IoT		**12**
	1	WPAN Technologies for IoT: IEEE 802.15.4, Zigbee,.	
	2	HART, NFC, Z-Wave, BLE, Bacnet, Modbus	
	3	IP Based Protocols for IoT IPv6, 6LowPAN, RPL, REST, AMPQ, CoAP, MQTT.	
	4	Edge connectivity and protocols	

4	**MODULE TITLE :** Applications of IoT		12
	1	Home Automation, Smart Cities, Energy, Retail Management, Logistics,	
	2	Agriculture, Health and Lifestyle, Industrial IoT	
	3	Legal challenges, IoT design Ethics	
	4	IoT in Environmental Protection.	

5	**Teacher Specific Module**		
			12

Essential Readings:

Text Books:

1. Hakima Chaouchi, — "The Internet of Things Connecting Objects to the Web" ISBN : 978-1- 84821-140-7, Wiley Publications

2. Olivier Hersent, David Boswarthick, and Omar Elloumi, — "The Internet of Things: Key Applications and Protocols", WileyPublications

3. Vijay Madisetti and ArshdeepBahga, — "Internet of Things (A HandsonApproach)", 1 st Edition, VPT, 2014.

4. J. Biron and J. Follett, "Foundational Elements of an IoT Solution", O'Reilly Media, 2016.

5. Keysight Technologies, "The Internet of Things: Enabling Technologies and Solutions for Design and Test", Application Note, 2016.

References

1. Daniel Minoli, — "Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications", ISBN: 978-1-118-47347-4, Willy Publications
2. Pethuru Raj and Anupama C. Raman, "The Internet of Things: Enabling Technologies, Platforms, and Use Cases", CRC Press
3. https://onlineurses.nptel.ac.in/noc17_cs22/course
4. http://www.cse.wustl.edu/~jain/cse570-15/ftp/iot_prot/index.html

Assessment Rubrics:

Evaluation Type		**Marks**
End Semester Evaluation		**70**
Continuous Evaluation		**30**
a)	Test Paper- 1	5
b)	Model Examination	10
c)	Assignment- 2 Numbers	10
d)	Seminar/viva	5
e)	Book/Article review	
f)	Field report	
Grand Total		**100**

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