

Internet of Things

Course Code	23CS4701D	Year	IV	Semester	I
Course Category	Professional Elective-IV	Branch	CSE	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	Computer Networks
Continuous Internal Evaluation:	30	Semester End Evaluation:	70	Total Marks:	100

Course Outcomes		
Upon successful completion of the course, the student will be able to:		
CO1	Understanding the evolution, components, and addressing strategies of Internet of Things (IoT) systems.	L2
CO2	Apply the principles of IoT sensing and actuation, including sensor and actuator types, characteristics, and deployment considerations.	L2
CO3	Analyze various IoT communication protocols, including infrastructure, discovery, data, and semantic protocols.	L4
CO4	Understand the architecture and significance of fog computing in supporting IoT-based applications.	L2
CO5	Apply IoT concepts to real-world domains such as agriculture, healthcare, and vehicular systems through case studies.	L3

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3											3	
CO2												2	
CO3	3		2										2
CO4													2
CO5			3										3

Unit No.	Content	Mapped CO
I	Emergence of IoT: Introduction, Evolution of IoT, Enabling IoT and the Complex Interdependence of Technologies, IoT Networking Components, Addressing Strategies in IoT.	CO1, CO2
II	IoT Sensing and Actuation: Introduction, Sensors, Sensor Characteristics, Sensorial Deviations, Sensing Types, Sensing Considerations, Actuators, Actuator Types ,Actuator Characteristics.	CO1, CO2
III	IoT Communication Technologies: Introduction, Infrastructure Protocols, Discovery Protocols, Data Protocols, Identification Protocols, Device Management, Semantic Protocols.	CO1, CO3
IV	Fog Computing and Its Applications: Introduction, View of Fog Computing Architecture, Fog Computing in IoT, Selected Applications of Fog Computing.	CO1, CO4

V	IoT Case Studies: Open web application security project on IoT, Agricultural IoT, Vehicular IoT, Healthcare IoT	CO1, CO5
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Learning Resources	
Text Books	
1. Introduction to IoT, Sudip Misra, Anandarup Mukhaerjee, Arjit Roy, Cambridge University Press, 2021. 2. Internet of Things: Architecture, Design Principles and Applications, Rajkamal, McGraw Hill Higher Education	
Reference Books	
1. Fog and Edge Computing: Principles and Paradigms, <u>Rajkumar Buyya (Editor)</u> , <u>Satish narayana Srirama (Editor)</u> , ISBN: 978-1-119-52498-4, January 2019. 2. Getting Started with the Internet of Things, CunoPfister , Oreilly	
E-Resources & other digital material	
1. NPTEL Online Course on IoT – By Prof. Sudip Misra, IIT Kharagpur, https://nptel.ac.in/courses/106105166 2. Coursera - An Introduction to Programming the IoT Specialization – University of California, Irvine, https://www.coursera.org/specializations/iot 3. edX - IoT Courses – by Microsoft, Curtin University, etc. https://www.edx.org/learn/iot 4. Udemy - IoT Projects and Arduino/ESP32, https://www.udemy.com (search "IoT") 5. https://owasp.org/www-project-internet-of-things/	