IOT NETWORKS

Course Code	20EC5702	Year	IV	Semester	I
Course Category	MINOR	Branch	ECE	Course Type	Theory
Credits	4	L-T-P	3-1-0	Prerequisites	Internet of Things
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	Interpret the impact and challenges posed by IoT networks leading to new architectural models (L2)
CO2	Identify security vulnerabilities in wireless networks, IoT applications and devices. (L3)
CO3	Demonstrate the use of wireless technologies for IoT (L3)
CO4	Distinguish relevant communication protocols of IOT (L4)
CO5	Interpret the services request response and publish subscribe of IOT application layer. (L3)

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:High, 2: Medium, 1:Low)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO2
CO1	2									2			2	2
CO2	3									3			3	3
CO3	2									2			2	2
CO4		2								2			2	2
CO5	2									2			2	2
Avg.	2	2								2			2	2

Syllabus		
Unit No.	**Contents**	**Mapped CO**
I	**INTRODUCTION:** M2M and IoT, Layered Architectures, System Components, Applications	CO1,CO2
II	**Concepts of IOT Networking:** IOT Networking, Types of Networks, Devices-Actuators and Controllers, Gateways; Security, Wireless Sensor Networks.	CO1,CO2
III	**IOT Protocol Layers:** Physical and Link layers: About physical and link layers, Wireline: Ethernet, ITU-T G.9903, IEEE1901.2, MS/TPl Wireless: IEEE802.11, IEEE802.15.3, IEEE802.15.4, Bluetooth Low Energy, ITU-T G.9959, DECT ULE, and NFC	CO1, CO3
IV	**Network and Transport Layers**: Need for IP IPv6, 6Low PAN: Addresses, Header Format, Routing and Forwarding, Header Compression, Fragmentation, Security Considerations, TCP and 6Low PAN	CO1,CO4

V	**Application Layer:** Architectures, Request/Response: REST Architecture, HTTP, XMPP, CoAP Publish/Subscribe: MQTT,AMQP	CO1,CO5

Learning Resources
Text Books
1. Rolando Herrero-Fundamentals of IoT Communication Technologies, Springer Publisher, Ist Ed., 2022 2. David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Robert Barton, Jerome Henry-IoT Fundamentals: Networking Technologies, Protocols and Use cases for the Internet of Things, CISCO Press, 2017
Reference Books
1. Olivier Hersent, David Boswarthick and Omar Elloumi-The Internet of Things: Key applications and Protocols, Wiley 2. Vijay Madisetti and Arsh deep Bahga-Internet of Things (A Hands on Approach), 1st Ed., VPT, 2014. (ISBN: 978-8173719547) 3. Raj Kamal-Internet of Things: Architecture and Design Principles, 1st Ed., McGraw Hill, Ed., 2017 (ISBN: 978-9352605224)
e- Resources & other digital material
1. https://nptel.ac.in/courses/106/105/106105166/