IoT APPLICATIONS IN ELECTRICAL ENGINEERING

Course Code	20SA8752	Year	IV	Semester(s)	I
Course Category	SOC	Branch	EEE	Course Type	Skill Oriented
Credits	2	L-T-P	1-0-2	Prerequisites	Nil
Continuous Internal Evaluation:	-	Semester End Evaluation:	50	Total Marks:	50

Course Outcomes	
Upon successful completion of the course, the student will be able to	
CO1	Examine the various fundamentals, architectures and technologies of Internet of things. (L3)
CO`2	Illustrate the various communication technologies and sensor technologies used in Internet of things. (L3)
CO3	Demostrate the various device connectivity methods using web and internet on the IoT environment. (L3)
CO4	Apply the knowledge of Internet of Things in the field of electrical engineering. (L3)
CO5	Get the ability to engage in independent study to make an effective presentation and submit a report on various technologies.

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	PSO1	PSO2
CO1	3				1		1		1				2	
CO2	3				1		1		1				2	
CO3	3				1		1		1				2	
CO4	3				1		1		1				2	
CO5	3								3					

SYLLABUS		
Unit No.	**Contents**	**Mapped CO**
I	**The Internet of Things :** An Overview of Internet of Things (IoT) – Architecture – Technology behind IoT – Sources of the IoT – M2M Communication – Examples of IoT.	**CO 1 CO 5**
II	**Design Principles for Connected Devices**: Introduction –IoT/M2M systems, Layers and Designs Standardization – Communication Technologies – Data Enrichment, Consolidation and Device Management atGateway – Ease of designing and affordability.	**CO 2 CO 5**

III	**Design Principles for the Web Connectivity**: Introduction – Web Communication protocols for Connected Devices - Message Communication protocols for Connected Devices – Web Connectivity for connected devices network.	**CO 3** **CO 5**
IV	**Internet Connectivity Principles**: Internet connectivity, Internet based communication – IP addressing in the IoT – Application Layer Protocols: HTTP, HTTPS.	**CO 3** **CO 5**
V	**Sensor technology**: Actuator, Sensor data communication protocols, Radio Frequency Identification technology, Wireless Sensor Network Technology.	**CO 4** **CO 5**

Exp.No	Contents	Mapped CO
1	Familiarization with Arduino/Raspberry Pi and perform necessary software installation.	CO 1
2	Digital I/O Interface – Multicolour Led, IR Sensor, PIR, Slot Sensor	CO 2
3	To interface temperature Sensor with Arduino and write program to print temperature and humidity readings	CO 2
4	Wireless module interface – Bluetooth and WiFi	CO 3
5	Smart Home Andriod App Development using APP Inventor and Arduino	CO 3
6	Design of digital Voltmeter and Ammeter	CO 4
7	Direction and Speed control of DC motor	CO 4

Learning Resources
Text Books
1.   Raj Kamal, Internet of Things: Architecture, Design Principles, McGraw Hill Education(India) Pvt. Limited, 2nd Edition, 2022.
Reference Books
1. Adrian McEwen and Hakim Cassimally, Designing the Internet of Things, Wiley, First edition, 2013.
2. Arshdeep Bahga, and Vijay Madisetti, Internet of Things : A Hands-on Approach, VPT publishers, 1st edition, 2014
Web Links
1. https://nptel.ac.in/courses/106105166