ELECTRICAL SAFETY

Course Code	20EE2501A	Year	III	Semester(s)	I
Course Category	Open Elective-I	Branch	EEE	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	-
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	**Understand** the Indian power sector organization and Electricity rules, electrical safety in residential, commercial, agriculture, hazardous areas and use of fire extinguishers. **(L2)**
CO2	**Assess** the Electrical Safety measures in operation and maintenance. **(L3)**
CO3	**Apply** the **s**afety measures during installation, testing and commissioning. **(L3)**
CO4	**Analyze** the Electrical Safety, Electric Shocks and Their Prevention. **(L4)**
CO5	**Examine** the hazardous areas and the fire extinguishers. **(L4)**
CO6	**Submit** a report on safety measures.

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1														
CO2	√					√		√				√		
CO3	√							√				√		
CO4		√				√								
CO5		√												
CO6	√	√						√	√	√				

SYLLABUS		
Unit No.	**Contents**	**Mapped CO**
I	**Introduction To Electrical Safety, Shocks And Their Prevention:** Terms and definitions, objectives of safety and security measures, Hazards associated with electric current and voltage, principles of electrical safety, Approaches to prevent Accidents. Primary and secondary electrical shocks, possibilities of getting electrical shock and its severity, medical analysis of electric shocks and its effects, shocks due to flash/ Spark over's, prevention of shocks, safety precautions against contact shocks, flash shocks, burns, residential buildings andshop.	CO1, CO2 CO3, CO4, CO6

II	**Electrical Safety in Residential, Commercial and Agricultural Installations**: Wiring and fitting –Domestic appliances –water tap giving shock –shock from wet wall –fan firing shock –multi-storied building – Temporary installations – Agricultural pump installation –Do's and Don'ts for safety in the use of domesticelectrical appliances.	CO1, CO2 CO4, CO6
III	**Electrical Safety during Installation, Testing and Commissioning, Operation and Maintenance**: Preliminary preparations –safe sequence – risk ofplant and equipment –safety documentation –field quality and safety -personal protective equipment –safety clearance notice –safety precautions –safeguards for operators –safety.	CO1, CO3 CO4, CO6
IV	**Electrical Safety in Hazardous Areas**: Hazardous zones –class 0,1 and 2 – spark, flashovers and corona discharge and functional requirements – Specifications of electrical plants, equipment's for hazardous locations **Equipment Earthing**: Introduction, Equipment earthing, Functional requirements of Earthing system, Neutral grounding, Protection against energized Metal parts.	CO1, CO2, CO5, CO6
V	**Fire Extinguishers**: Fundamentals of fire-initiation of fires, types; extinguishing techniques, prevention of fire, types of fire extinguishers, fire detection and alarm system; CO_2, Halogen gas and foam schemes.	CO1, CO5, CO6

Learning Resources
Text Books
1. Rao, S. and Saluja, H.L., "Electrical Safety, Fire Safety Engineering and Safety Management", Khanna Publishers, 4th edition, 2020 2. John Codick, "Electrical safety hand book", McGraw Hill Inc., 3rd edition, 2006
Reference Books
1. Cooper.W.F, "Electrical safety Engineering", Newnes-Butterworth Company, 3rd edition, 1998. 2. Kothari, D.P and Nagrath, I.J., "Power System Engineering", McGraw Hill, 3rd edition, 2019. 3. Wadhwa, C.L., "Electric Power Systems", New Age International, 8th edition, 2004.