ELECTRICAL SAFETY

Course Code	19ES5501B	Year	III	Semester	I
Course Category	Open Elective-I	Branch	Common to All	Course Type	Theory
Credits	3	L – T – P	3 – 0 – 0	Prerequisites	Nil
Continuous Internal Evaluation	30	Semester End Evaluation	70	Total Marks	100

Course Outcomes		Levels
After 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	**Outline** the electrical safety during installation, testing and commissioning procedure.	L2
CO3	**Make use of** specification of electrical plants and classification of safety equipment for various hazardous locations.	L3
CO4	**Distinguish** various fire extinguishers and their classification.	L4

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		2		1	2		2			1		2	1
CO2	3		2		1	2		2			1		2	1
CO3	3		2		1	2		2			1		2	1
CO4	3		2		1	2		2			1		2	1

Syllabus		
UNIT No.	Contents	Mapped COs
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, who is exposed, principles of electrical safety, Approaches to prevent Accidents, scope of subject electrical safety. 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 and shop.	CO1
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 domestic electrical appliances.	CO1
III	**Electrical Safety during Installation, Testing and Commissioning, Operation and Maintenance:** Preliminary preparations –safe sequence – risk of plant and equipment –safety documentation –field quality and safety -personal protective equipment –safety clearance notice –safety precautions –safeguards for operators –safety.	CO2

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 – Classification of equipment enclosure for various hazardous gases and vapours – classification of equipment/enclosure for hazardous locations.	CO1 CO3
V	**Fire Extinguishers:** Fundamentals of fire-initiation of fires, types; extinguishing techniques, prevention of fire, types of fire extinguishers, fire detection and alarm system;CO2and Halogen gas schemes; foam schemes.	CO1 CO4

Learning Recourse(s)

Text Books

1. Rao, S. and Saluja, H.L., "Electrical Safety, Fire Safety Engineering and Safety Management", Khanna Publishers, 1988.

Reference Books

1. Cooper. W.F, "Electrical safety Engineering", Newnes-Butterworth Company, 1978.
2. John Codick, "Electrical safety hand book", McGraw Hill Inc., New Delhi, 2000.
3. Nagrath, I.J. and Kothari, D.P., "Power System Engineering", Tata McGraw Hill, 1998.
4. Wadhwa, C.L., "Electric Power Systems", New Age International, 2004.