



# Techno College of Engineering Agartala

An Engineering College Approved by AICTE, MHRD, Govt. of India

Affiliated to Tripura University (A Central University),

Department of Electrical Engineering



## List of Laboratory Experiments

Electrical Estimation Design Practice Laboratory							
Course Code	Hours / Week				Maximum Marks		
PC EE 307	L	T	P	C	CIA	SEE	Total
	0	0	2	1	40	60	100
<b>Number of classes: 24 hours</b>		<b>Prerequisites: Basic Electrical Engineering</b>					
<b>Branch: EE</b>		<b>Semester: III</b>					

### Course overview:

This course provides a comprehensive understanding of electrical system components and their applications in residential, commercial, and industrial installations. Students will learn about LT wiring systems, protective devices, and electrical safety practices. The course covers the design and planning of residential and commercial electrical systems, including load calculation, component selection, and earthing. It also introduces illumination systems, focusing on lighting design, modern lighting technologies, and energy-efficient practices. Additionally, the course explores industrial systems such as DG sets, UPS systems, and battery banks, emphasizing their sizing and selection.

### Course objectives:

- To understand the components and layout of LT electrical wiring systems including selection of cables, switches, protection devices, and safety practices.
- To design and analyze residential and commercial electrical installations with proper load calculations, component sizing, and earthing requirements.
- To gain knowledge of illumination systems and lighting design using modern lighting technologies like CFL and LED, with a focus on energy efficiency.
- To study industrial electrical systems including DG sets, UPS systems, and battery banks, and learn methods for their proper sizing and selection.

### Course outcomes:

CO Number	CO Description	K-level
CO-1	Understand the electrical wiring systems for residential, commercial and industrial consumers.	K-2
CO-2	Understand various components of residential and commercial electrical systems.	K-2
CO-3	Categorize various lighting systems	K-4
CO-4	Analyze and select various Industrial electrical system.	K-4
Sl. No.	EXPERIMENT NAME	CO
1.	LT system wiring components, selection of cables, wires, switches, distribution box, metering system, Tariff structure, protection components-	CO1



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	Fuse, MCB, MCCB, ELCB, inverse current characteristics, symbols, single line diagram (SLD) of a wiring system, Contactor, Isolator, Relays, MPCB, Electric shock and Electrical safety practices.	
2.	Types of residential and commercial wiring systems, general rules and guidelines for installation, load calculation and sizing of wire, rating of main switch, distribution board and protection devices, earthing system calculations, requirements of commercial installation, deciding lighting scheme and number of lamps, earthing of commercial installation, selection and sizing of components.	CO2
3.	Understanding various terms regarding light, lumen, intensity, candle power, lamp efficiency, specific consumption, glare, space to height ratio, waste light factor, depreciation factor, various illumination schemes, Incandescent lamps and modern luminaries like CFL, LED and their operation, energy saving in illumination systems, design of a lighting scheme for a residential and commercial premises, flood lighting.	CO3
4.	DG Systems, UPS System, Electrical Systems for the elevators, Battery banks, Sizing the DG, UPS and Battery Banks, Selection of UPS and Battery Banks.	CO4