

18EEP23	INDUSTRIAL ELECTRICAL SYSTEMS	L	T	P	C
		3	0	0	3
Course Objectives:					
1	Know about the implementation of Electrical Systems based on applications				
2	Learn various safety equipment and their installations				
3	Get a clear awareness about automation in Electrical Systems				
Unit I	ELECTRICAL SYSTEM COMPONENTS	9	+	0	
LT system wiring components, selection of cables, wires, switches, distribution box, metering system, Tariff structure, protection components- Fuse, MCB, MCCB, ELCB, RCCB inverse current characteristics, symbols, single line diagram (SLD) of a wiring system, Contactor, Isolator, Relays, MPCB, Electric shock and Electrical safety practices					
Unit II	RESIDENTIAL AND COMMERCIAL ELECTRICAL SYSTEMS	9	+	0	
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.					
Unit III	ILLUMINATION SYSTEMS	9	+	0	
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.					
Unit IV	INDUSTRIAL ELECTRICAL SYSTEM	9	+	0	
HT connection, industrial substation, Transformer selection, Industrial loads, motors, starting of motors, SLD, Cable and Switchgear selection, Lightning Protection, Earthing design, Power factor correction – kVAR calculations, type of compensation, Introduction to PCC, MCC panels. Specifications of LT Breakers, MCB and other LT panel components.					
Unit V	INDUSTRIAL ELECTRICAL SYSTEM AUTOMATION	9	+	0	
Study of basic PLC, Role of in automation, advantages of process automation, PLC based control system design, Panel Metering and Introduction to SCADA system for distribution automation.					
Total (45+0)= 45 Periods					
Course Outcomes:					
Upon completion of this course, the students will be able to:					
CO1	:	Select appropriate switchgears based on applications			
CO2	:	Design electrical wiring system according to requirements			
CO3	:	Design an illumination system for different types of constructions			
CO4	:	Understand proper selection of automation in electrical systems			
CO5	:	Develop need based projects.			
Text Books:					
1.	S.L. Uppal and G.C. Garg, "Electrical Wiring, Estimating & Costing", Khanna publishers, 2008.				
2.	K. B. Raina, "Electrical Design, Estimating & Costing", New age International, 2007.				
3.	S. Singh and R. D. Singh, "Electrical estimating and costing", Dhanpat Rai and Co., 2010, 2 nd edition.				
4.	Web site for IS Standards. 2021				
4.	H. Joshi, "Residential Commercial and Industrial Systems", McGraw Hill Education, 2008.				

E-References:

1	www.onlinecourses.nptel.ac.in
2	www.class-central.com

CO/PO Mapping

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1	0	1	1	1	1	0	0	0	1
CO2	1	1	1	1	1	1	1	1	1	1	1	1
CO3	1	1	1	1	1	1	1	1	1	1	1	1
CO4	1	1	1	1	1	1	1	1	1	1	1	1
CO5	1	1	1	1	1	1	1	1	1	1	1	1