



## **C.U.SHAH UNIVERSITY**

**FACULTY OF:** - Technology & Engineering  
**DEPARTMENT OF:** -Electrical Engineering  
**BRANCH:** - Electrical & Electronics Engineering  
**SEMESTER:** - V  
**COURSE:** - B.Tech  
**CODE:** - 4TE05ECE1  
**NAME:** – Estimation and Costing of Electrical Energy

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### **Teaching & Evaluation Scheme**

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
		Th	Tu	Pr	Total		Theory				Practical (Marks)			Total
							Sessional Exam		University Exam		Internal		University	
							Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
4TE05ECE1	Estimation and Costing of Electrical Energy	1	0	2	3	2	--	--	--	--		50	50	100

### **OBJECTIVES**

1. To study various electrical circuits' namely electrical components, fan, tube light, transformer, and chocks.
2. To study design and implementation of modelling electrical commercial and domestic components.
3. To study design and simulation of electrical circuits using analog components

### **PREREQUISITES**

1. Basics of Electrical Circuits and Components

### **COURSE OUTLINES**

Sr. No.	Course Contents	Hours
1	<b>General Principles Of Estimation:</b> Introduction to estimation & costing, Electrical Schedule. Catalogues, Market Survey and source selection. Recording of estimates, Determination of required quantity of material, Overhead charges, Profit and efficiency	06
2	<b>Residential Building Electrification:</b> General Rules guidelines for wiring of residential installation and positioning of equipments, Principles of circuit design in lighting and power circuits	03

	Procedures for designing the circuits and deciding the number of circuits, Method of drawing single line diagram, Selection of type of wiring and rating of wires and cables Load calculations and selection of size of conductor, Selection of rating of main switch Distribution board, protective switchgear ELCB and MCB and wiring accessories, Earthing of residential Installation, Sequence to be followed for preparing estimate, Preparation of detailed estimates and costing of residential installation and efficiency.	
3	<b>Electrification Of Commercial Installation:</b> Concept of commercial installation, Differentiate between electrification of residential and commercial installation, Fundamental considerations for planning of an electrical installation system for commercial building, Design considerations of electrical installation system for commercial building, Load calculation and selection of size of service connection and nature of supply, Deciding the size of the cables, bus bar and bus bar chambers, Mounting arrangements and positioning of switchboards, distribution boards main switch etc, Earthing of the electrical installation and efficiency.	03
4	<b>Design and Estimation of Overhead Transmission &amp; Distribution Lines :</b> Introduction, Typical AC electrical power system, Main components of overhead lines, Line supports. Factors governing height of pole, Conductor materials, Determination of size of conductor for overhead transmission line, Cross arms, Pole brackets and clamps, Guys and Stays, Conductors configuration spacing and clearances, Conductors configuration spacing and clearances, Span lengths, Overhead line insulators, Insulator materials, Types of insulators, Lightning Arrestors, Phase plates, Danger plates, Anti climbing devices, Bird guards, Beads of jumpers .Anti climbing devices, Bird guards, Beads of jumpers, Guarding of overhead lines, Clearances of conductor from ground Spacing between conductors, Testing and commissioning of overhead distribution lines, some important specifications	04

### Learning Outcomes

After the completion of this course the students would be able to:

1. Design and implement various Electrical devices installation.
2. Understanding about electrical commercial installation and costing and residential installation and costing.
3. To understand costing and estimation of electrical circuits.

### Books Recommended

1. Electrical Installation Estimating & Costing J.B.Gupta, VIII Edition S.K. Katria & Sons New Delhi 979-93-5014- 279-0
2. ELECTRICAL ESTIMATING AND ENERGY MANAGEMENT K.R GANGADHARA RAO Sapna. Publications 078033 4588.
3. Electrical Design Estimating and Costing K.B.Raina S.K.Bhattacharya New Age International 81-224-0363-8.
4. Electrical Wiring Estimating and Costing S.L.UPPAL , G.C GARG Khanna Publishers Delhi 9788174092403