GANPAT UNIVERSITY

FACULTY OF ENGINEERING AND TECHNOLOGY (DIPLOMA PROGRAMMES)

Programme	Diploma Engineering		Branch/Spec.	Electrical Engineering	
Semester	VI		Version	1.0.0.0	
Effective from Academic Year	2020-21		Effective for the batch Admitted in	July 2018	
Subject code	1EE2603	Subject Name	ELECTRICAL WIRING, ESTIMATING, COASTING AND CONTRACTING		

Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	4	0	1	0	5	Theory	40	60	100
Hours	4	0	2	0	6	Practical	30	20	50

Course Learning Outcomes:

After successful completion of the course, student will be able to

- Prepare an estimate of quantity and cost of the material for a electrical project following IE Act-2003.
- Prepare detail estimate and costing of Residential and commercial Electrical Installations following IE Act-2003.
- Test Residential, commercial and Industrial Electrical Installation following IE Act-2003.
- Prepare estimates for repairs and maintenance of electrical devices and equipment.

Theory syllabus

UNIT	Unit Content	Unit Learning Outcomes	Marks	Hrs
Unit – I Electrical Wiring and IE Rules	1a. Interpret different electrical engineering drawings of an electrical installation. 1b. Describe the safety tests as per IS. 1c. Calculate illumination requirements	1.1 of Electrical installation 1.2 Reading and Interpretation of Electrical Engineering Drawings, diagrams, plans and layout 1.3 Preparation of testing/ supervisory report 1.4 Selection of electrical accessories 1.5 Illumination requirements in high rise, Commercial and public Building 1.6 Economical illumination design	07	10

Unit – II Estimating, Costing and Contracting	2a Classify types of estimation and estimation tools 2b Describe Purchase procedure 2c Explain the types of contracts and contractors. 2d Explain the concept of contracts and Tenders 2e Explain the procedure for submission and opening of tenders. 2f Explain the principles of Execution of works 2g Explain the procedure for Billing of executed work	2.1 Estimation and estimation tools. 2.2 Electrical Schedule of rates, catalogues, Survey and source selection, Recording estimates 2.3 Quantity and cost of material required. 2.4 Purchase system, Purchase enquiry and selection of appropriate purchase mode, Comparative statement, Purchase orders, Payment of bills 2.5 Types of contract system. 2.6 Tendering procedure and preparation of simple tender, Earnest Money Deposit, Security Deposit 2.7 Schedule of rates (S.O.R.)	15	05
Unit – III Estimating and Costing of Domestic and Industrial Wiring	4a. Sketch layout of transmission line with specifications 4b. Prepare plan of transmission line project work. 4c. Determine main components and specification of transmission line. 4d. Estimate quantity of material and cost required for a transmission line project work.	4.1 Transmission lines, Line supports, Factors governing height of pole, 4.2 Conductor materials, size of conductor for overhead 4.3 Transmission line: cross arms, pole brackets and clamps, guys and stays, conductors configuration spacing and clearances, span lengths, overhead line insulators, insulator materials lightning arrestors, erection of supports, setting of stays, 4.4 Earthing of lines, Guarding of overhead lines, Clearances of conductor from ground, Spacing between supports conductors, 4.5 I.E. rules pertaining to LV Transmission lines	15	15
Unit - IV Estimation of Overhead Transmission Line, and Underground Distribution System	4a. Draw layout of overhead distribution line. 4b. Prepare plan of overhead distribution project work. 4c. Determine main components and specification of overhead distribution system. 4d. Estimate quantity of material and cost required for a overhead distribution project work. 4e.List Types of service connections	4.6 Describe Method of installation of service connection(1-phase and 3-phase), observing I.E. rules 4.7 Overhead distribution system. 4.8 Materials and accessories required for the overhead distribution system. 4.9 Estimate for 440 V, 3-phase, 4 wires or 3 wires overhead distribution system. 4.10 Types of service connections	15	15

		4.11 Method of installation of service connection(1-phase and 3-phase), 4.12 I.E. rules pertaining to overhead lines and service connection		
Unit – V Estimating and Costing of Repairs and Maintenance	5a Survey market for cost of products and parts. 5b Prepare drawing of products 5c Prepare cost table for new product 5d Prepare cost table for repair and maintenance of electric fan, automatic electric iron, single phase transformer, mixer grinder, D.O.L. Starter. 5e List Tools used for repairs & maintenance work	5.1 D.O.L. starter, small motor, mono block pump, automatic electric iron, table/ceiling fan, ICDP/ICTP Switch, etc. 5.2 Preparation of detailed drawing work of the product. 5.3 Preparation of material quantity sheet for the product. 5.4 Materials and cost required for maintenance work. 5.5 Estimation of repairing cost and overall cost. 5.6 Tools used for repairs & maintenance work Preparation of cost schedule for repair and maintenance of electric fan, automatic electric iron, single phase transformer, mixer grinder, D.O.L. Starter.	08	15

List of Practical	
1	Select appropriate wiring and list materials and accessories for given project
2	Undertake following wirings a. Tube light wiring b. Stair case wiring c. Go down wiring d. Parallel loop wiring
3	Prepare a tender notice for given project work
4	Prepare cost estimate of a domestic installation cost (Residential building, laboratory room or Drawing hall etc)
5	Prepare cost estimate of an industrial installation. (workshop, agriculture, flour mill, etc.)
6	Prepare cost estimate of an overhead service connection. (single phase and three phase).
7	Prepare cost estimate of an underground service connection (single phase and three phase).
8	Estimate of material and specifications required for overhead, 440 V, 3-phase, 4 wire or 3 wire distribution line.
9	Estimate of material and specifications of any one Electrical Product
10	Estimate of material and specifications of repairs and maintenance of any one domestic appliance
List of Instruments/Equipments/ Trainer Board	
1	Different wiring Tools and wiring material – 1 Set
2	DOL starter – 1 No
3	Star delta starter – 1 No.
4	Automatic electric iron – 1 No.
5	Table/ceiling fan – 1 No
6	ICDP/ICTP – 1 No

List of Reference Books			
1	Electrical Design, estimating & Costing	Raina, K. B. and Bhattacharya,S.K.	New Age International (p) Limited, New Delhi
2	Electrical Estimating & costing	Uppal, S L	New Age International (p) Limited, New Delhi
Link of Learning Resources			
1	www.nptel.iitm.ac.in		