GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA IN ELECTRICAL ENGINEERING
SEMESTER: V

Subject Name: **Electrical Wiring, Estimation, Costing and Contracting**

Sr. No.	Course Content	Total Theory Hours
1.	**Electrical Wiring:** 1.1 Types of wires. 1.2 Different types of wiring system and wiring procedure. 1.3 Merits, demerits and comparison of different types of wiring. 1.4 Different types and specifications of wiring materials, Accessories and wiring tools. 1.5 Domestic and industrial panel wiring. 1.6 I.E. rules for wiring, including Electricity supply act-1948. 1.7 Different types of wiring circuits.	6
2.	**Elements of Estimating:** 2.1 Definition of "Estimation". 2.2 Types of estimation and estimation tools. 2.3 Overhead and service charges. 2.4 Purchase procedure.	4
3.	**Estimating and Costing of Domestic and Industrial Wiring:** 3.1 Layout and wiring diagram for residential building and industrial wiring. 3.2 Selection of number of circuit for project as per IE rules. 3.3 Estimation for residential wiring and industrial wiring. 3.4 I.E. rules observed for above wiring.	6
4.	**Estimating and Costing of Service Connection (Domestic and Industrial):** 4.1 Survey work for domestic and industrial service connection. 4.2 Lay out/ wiring diagram of service connection (given project work). 4.3 List of materials and accessories along with specifications required for given project work. 4.4 Estimation of service connection for domestic and industrial (1-phase and 3-phase) service connections. 4.5 I.E. rules pertaining to above wiring.	5
5.	**Estimation of Overhead and Underground Distribution System:** 5.1 Survey work for estimation of overhead and underground distribution system. 5.2 Planning and layout of project.	6

	5.3 List of materials and accessories required for the given project. 5.4 Procedure for preparing estimate for 440 V, 3-phase, 4 wire or 3 wire overhead and underground distribution system. 5.5 Necessary drawing/ sketches of overhead and underground service connection. 5.6 I.E. rules pertaining to above project.	
6.	**Estimating and Costing of Electrical Product:** 6.1 Market survey for cost of given product like D.O.L. starter, small motor, mono block pump, automatic electric iron, table/ceiling fan, ICDP/ICTP switch, etc. 6.2 Preparation of detailed drawing work of the product. 6.3 Preparation of material quantity sheet for the product. 6.4 Market survey for availability of required materials, their cost and other requirements. 6.5 Preparation of cost schedule of product. 6.6 Find out cost of product considering material cost, labour cost and overhead Charges. 6.7 Validation of cost schedule. 6.8 Financial arrangement for the product.	5
7.	**Estimating and Costing of Repairs and Maintenance of Electrical Devices and Equipment:** 7.1 Location of fault. 7.2 Materials required and their cost for remedial measure of fault. 7.3 Estimation of repairing cost. 7.4 Estimation of maintenance, servicing and testing cost including labour cost (Service charge). 7.5 Tools used for repairs & maintenance work. 7.6 Detailed estimation and preparation of cost schedule for repair and maintenance of electric fan, automatic electric iron, single phase transformer, mixer grinder, D.O.L. Starter, etc.	5
8.	**Principles of Contracting:** 8.1 Terms, conditions, and types of contract system. 8.2 Tender, tendering procedure and preparation of simple tender. 8.3 Terms and conditions of tender, procedure for inviting and scrutinizing of tender. 8.4 Importance of Earnest Money Deposit, Security Deposit and S.O.R.	5

Laboratory Experiences:

1. Carryout following wirings
   a. Tube light wiring
   b. Stair case wiring
   c. Godown wiring
   d. Parallel loop wiring
2. Select appropriate wiring and list materials and accessories for given project.
3. Estimating and costing of a domestic installation cost (Residential building, laboratory room or Drawing hall etc) with concept of illumination design.
4. Estimating and costing of industrial installation. (work shop, agriculture, flour mill etc)
5. Estimating and costing of overhead service connection. (single phase and three phase).
6. Estimating and costing of underground service connection (single phase and three phase).
7. Estimating and costing of overhead, 440 V, 3-phase ,4 wire or 3 wire distribution line.
8. Estimating and costing of underground, distribution line.
9. Estimating and costing of any one Electrical Product.
10. Estimating and costing of repairs and maintenance of any one domestic appliance.
11. Prepare a tender notice for given project work.

Tutorial Work:

1. Select appropriate wiring, list materials and accessories for given drawing or a room, residence, workshop, etc. and prepare wiring diagram.
2. Give the case study for Estimation and costing of a domestic installation cost with concept of illumination design.
3. Give the case study for Estimation and costing of industrial installation. (work shop)
4. Give the case study for Estimating and costing of overhead service connection. (single phase and three phase).
5. Give the case study for Estimating and costing of underground service connection (single phase and three phase).
6. Give the case study for Estimating and costing of overhead, 440 V, 3-phase, 4 wire or 3 wire distribution line.
7. Give the case study for Estimating and costing of underground, distribution line.
8. Give the case study for Estimating and costing of any one Electrical Product.
9. Give the case study for Estimating and costing of repairs and maintenance of any one domestic appliance.

Reference Books:

1. Electrical wiring, estimating and costing. By S.L. Uppal- Khanna Publisher
2. Electrical costing, estimating and contracting. By S.K. Bhattacharya - TTTI, Chandigarh
3. Electrical estimating and costing. By M.N. Bajpai- Saroj publication.
4. I.E. rules gadget.