Lok Jagruti Kendra University
University with a Difference

Diploma in Civil Engineering

LJ Polytechnic

Course Code:025050503

Estimating & Costing

Programme / Branch Name			Diploma in Civil Engineering			
Course Name	Estimating & Costing				**Course Code**	025050503
Course Type	HSSC	BSC	ESC	PCC	OEC	PEC

Legends: HSSC: Humanities and Social Sciences Courses BSC: Basic Science Courses
ESC: Engineering Science Courses PCC: Program Core Courses
OEC: Open Elective Courses PEC: Program Elective Courses

1. Teaching and Evaluation Scheme

Teaching Hours / Week				**Evaluation Scheme**			
L	**T**	**P**	**Total Credit**	**CCE**	**SEE (Th)**	**SEE (Pr)**	**TOTAL**
3	2	0	5	50	50	100	200

Legends:
L: Lectures T: Tutorial P: Practical
CCE: Continuous & Comprehensive Evaluation
SEE (Th): Semester End Evaluation (Theory)
SEE (Pr): Semester End Evaluation (Practical)

2. Prerequisites

- ✓ Construction Technology

3. Rationale

Estimating and costing are the two terms which are used in civil engineering. Estimation is the process of predicting the cost of construction projects by comparing the project to a similar one that has already been completed. Costing is the process of calculating the overall cost of a construction project considering all aspects such as labor, materials, equipment costs, and taxes. Elements of preliminary estimating, cost planning and detailed estimating will be intergrated and applied to enable rational cost related decisions. The course will also make the students capable of calculating area, volume and other dimension of the projects related to the construction of pavement or canal.

4. Objectives

- ✓ To impart knowledge of estimating and costing for civil engineering works.
- ✓ To ascertain the necessary amount of resources required for civil engineering projects.
- ✓ To understand the importance of specifications for good quality construction work.
- ✓ To impart knowledge of market rates of materials and labours.
- ✓ To direct the quantity estimation and BOQ of civil engineering works.

5. Contents

Unit No.	Unit Name	Topics	Learning Outcomes	% Weightage	Hours
1.	**Introduction to Estimate**	1.1. General 1.2. Purpose of Estimating 1.3. Data required for Preparing Detailed Estimate 1.4. Different Types of Estimates 1.5. Factors to be Considered during Preparation of a Detailed Estimate 1.6. Approximate Estimate 1.7. Purpose of an Approximate Estimate 1.8. Approximate Methods of Estimating for Building 1.9. Approximate Cost for Water Supply, Sanitary and Electrification Works 1.10. Contingencies, Work-charge Establishment, Prime Cost, Day work, Provisonal Sum, Provisonal Quantities, Administrative Approval, Technical Sanction	• Importance of Estimate and Costing in Building Works. • Knowledge About Types of Estimate • Explain Various Terms Used in Estimation Work.	20	8
2.	**Modes of Measurements**	2.1. General 2.2. General Rules 2.3. Principle Units for Various Items of Works 2.4. Limits of Measurement and Degrees of Accuracy in Estimating 2.5. Methods of Mesurement of Works 2.6. General Items of Works, Unit of Measurement and Mode of measurement for Different Items of Works and Materials	• Importance of General Rules and Accuracy Criteria in Measurement. • Knowledge About Rules of Deduction for Various Items of Works. • Knowledge About Unit of Measurement for Building Works and Materials.	10	4

		2.7. Thickness of Wall for Different Sizes of Bricks			
3.	**Specifications**	3.1. General 3.2. Necessity of Specifications 3.3. How to Write Specifications 3.4. Types of Specifications 3.5. Detailed Specifications of Building Works	• Importance of Specifications in Estimation. • Write Specifications for Different Building Works.	15	6
4.	**Analysis of Rate**	4.1. General 4.2. Purpose of Rate Analysis 4.3. How to Fix up Rate per Unit of an Item 4.4. Factors affecting the Rate Analysis 4.5. Quantity of Materials Required for Different Items of Works 4.6. Task or Out-Turn Work 4.7. Schedule of Rates 4.8. Analysis of Rates for Different Building Works	• Knowledge About Market Rates, Labour Rates. • Importance of Rate Analysis in Estimation. • Derive Rates for Different Building Works to Prepare S.O.R.	20	8
5.	**Detailed Estimate**	5.1. How to Prepare a Detailed Estimate 5.2. Different Methods for Estimating Building Works 5.3. Detailed Estimate of a Single/Two Roomed Building 5.4. Detailed Estimate of a Single Storied Residential Building 5.5. Detailed Estimate of a Reinforced Cement Concrete Works 5.6. General Methods for Computation of Earthwork 5.7. Volume of Earthwork	• Knowledge About Methods of Preparing Detailed Estimate. • Evaluate Cost of Building works and RCC Works. • Quantity Estimation of Earthwork for Road/Canal Work.	35	16
				Total Hours	**42**

6. List of Tutorials / Exercises

The practicals/exercises have been properly designed and implemented in an attempt to develop different types of skills so that students can acquire the competencies/programme outcomes. Following is the list of practicals/exercises.

Sr. No.	Tutorials / Exercises	Key Competency	Hours
1.	Interpret different civil engineering building drawings.	Identification of Various Civil Engineering Works.	2
2.	Detailed specifications for at least 5 items of construction work.	Quality of Material and Workmanship of Various Construction Works.	4
3.	Rate analysis for at least 5 items of construction work.	Rate per unit of an Item of Various Construction Works.	4
4.	Quantity estimation and costing for a single storey residential building.	Detailed Estimate for Load Bearing Structure.	4
5.	Quantity estimation and costing for R.C.C. works.	Detailed Estimate for Slab, Beam, Column and Retaining Wall.	10
6.	Bar bending schedule for R.C.C. works.	Reinforcement Detailing.	2
7.	Quantity estimation of earthwork for road works.	Area and Volume of Earthwork.	2
		Total Hours	**28**

7. Suggested Specification Table for Evaluation Scheme

Unit No.	Unit Name	Distribution of Topics According to Bloom's Taxonomy					
		R %	U %	App %	C %	E %	An %
1.	Introduction to Estimate	50	40	10	0	0	0
2.	Modes of Measurements	30	60	0	0	10	0
3.	Specifications	20	40	40	0	0	0
4.	Analysis of Rate	20	30	0	0	10	40
5.	Detailed Estimate	10	10	10	25	45	0

Legends: R: Remembering U: Understanding
App: Applying C: Creating
E: Evaluating An: Analyzing

8. Textbook

1) Estimating, Costing, Specification & Valuation in Civil Engineering by M. Chakraborti, P.H. Engineering, West Bengal.

9. Reference Books

1) Estimating and Costing in Civil Engineering by B. N. Dutta, UBS Publishers' Distributors Pvt. Ltd.
2) Estimating and Costing and Valuation by Rangwala, Charotar Publishing House Pvt. Ltd.
3) Textbook of Estimating and Costing by G. S. Birdie, Dhanpat Rai Publishing Company (P) Ptd.

10. List of Publications

1) IS 1200 (Part I to XXV), Methods of Measurement of Building and Civil Engineering Works.
2) Schedule of Rates (S.O.R.)

11. Open Sources (Website, Video, Movie)

1) www.nptel.ac.in
2) www.easyengineering.net
3) LJP-Civil-Estimating, Costing and Valuation (YouTube)