



# GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code: 3174017

PROFESSIONAL PRACTICE AND VALUATION OF INFRASTRUCTURE

7<sup>th</sup> SEMESTER

Type of Course: **Core**

Prerequisite: **NIL**

### Rationale:

To make student capable of developing approximate and detailed estimate of buildings and other civil infrastructures.

To make students understand various contracts, their suitability and the procurement process involved in construction projects

To carry out valuation of real estate and other infrastructure properties

### Teaching and Examination Scheme

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
			ESE	PA(M)	Viva	PA (I)		
3	0	2	4	70	30	30	20	150

### Course Contents

Sr. No.	Topics	Hrs.
1	<b>Introduction to estimates:</b> Computation of areas and volumes of special solid shapes, Purpose of estimates, Type of estimates: Approximate estimate, Detailed estimate, Revised Estimate, Repair & Maintenance estimates, Contractors & Owners estimates, Construction cost index, Approximate estimation of buildings & other infrastructures	4
2	<b>Detailed Estimates:</b> Data required for detailed estimate, Quantity sheet, Quantity analysis of building and other important civil structures, Steel Quantity analysis of RCC elements/structures, Quantity analysis of structural steel truss and other elements, Quantity analysis of infrastructure elements like culverts/minor bridge, Water/Waste water system & roads	14
3	<b>Rate Analysis and Estimate Preparation:</b> BOQs, Rate Analysis of various items of work, Standard rates/SOR, Contingency items in estimates, Estimate preparation, Measurement of items of work (IS1200) and preparation of bills. <b>Productivity Analysis:</b> Factors impacting labour productivity, project documents (progress reports, daily reports, time sheets and labor records, etc.), Productivity analysis for different activities	6
4	<b>Tendering and Contracting:</b> Essentials of Contract, Various types of Civil Engineering contracts, Tendering process & tender documents, prequalification, Tendering: Process of tendering: Tender notice, Bid security, Prequalification process, Tender submission and evaluation, Security deposits/performance guarantee & Defect liability, Contract agreement & contract documents	4



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5	<b>Specification and Conditions of Contract:</b> Specification for material and workmanship, General and special conditions of contract for Time delay, Scope changes, Extra claims, Dispute resolution & arbitration, Termination of contract.	4
6	<b>Valuation:</b> Valuation-Definitions of value, Price and cost, Depreciation, Sinking fund, Different type of values and their significance, Factor affecting value, Rent and standard rent, Years purchase , Valuation tables, Easement, types of easements, Significance of easement in valuation, Estimation of values of different types of buildings, land and other civil infrastructures	10
	<b>Total</b>	<b>42</b>

## Reference Book(s)

- (1) B. N. Dutta, Estimation and Costing In Civil Engineering, Ubs Publishers Distributors, Ltd.
- (2) S. C. Rangwala, Estimating and Costing, Charotar Publishing House.
- (3) G. S. Birdi, Textbook of Estimating & Costing, Dhanpat Rai and Sons, Delhi.
- (4) M. Chakraborti, Estimating, Costing, Specification and Valuation.
- (5) P.W.D. Handbook and SOR, IS Code – 1200.
- (6) A. S. Kotadia, Professional Practice and Valuation, Mahajan Publications.
- (7) S. C. Rangwala, Valuation of Real Properties, Charotar Publication

**Course Outcomes:** After studying this subject, students will be able to

Sr. No.	CO statement	Marks % weightage
CO-1	Preparing approximate estimate and detailed estimate of building and other civil infrastructures	45
CO-2	Develop justified rate of a particular construction item with suitable assumptions.	15
CO-3	To understand tender processing and different contract conditions	15
CO-4	Estimation of values of different types of buildings, land and other civil infrastructures	25

## List of Practical

1. Collection of Different Rates & Specifications of construction items
2. Comparative Rate Analysis of selected items
3. Visit of Residential Building and Quantity Analysis
4. Visit of RCC Project site and Steel Quantity Analysis
5. Visit of Steel Structure and Quantity Analysis
6. Measurement & Bill preparation of Building/Civil Infrastructures
7. Specification Preparation



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8. Study of Tender Document & Contractual Risk Assessments
9. Valuation exercises for real estate and civil infrastructures
10. Estimate Preparation Project

## **Suggested Specification table with Marks (Theory):**

<b>Distribution of Theory Marks</b>					
R Level	U Level	A Level	N Level	E Level	C Level
<b>10</b>	<b>15</b>	<b>20</b>	<b>20</b>	<b>25</b>	<b>10</b>

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above

**List of Open Source Software/learning website:** [www.nptel.iitm.ac.in/courses/](http://www.nptel.iitm.ac.in/courses/)