GUJARAT TECHNOLOGICAL UNIVERSITY

BE (CIVIL AND INFRASTRUCTURE ENGINEERING)

PROFESSIONAL PRACTICE AND VALUATION OF INFRASTRUCTURE

SUBJECT CODE: 2184001

B.E. 8th SEMESTER

Type of Course: **Core** Prerequisite: **NIL**

Course Objectives: students may be able:

1. To make student capable of developing approximate and detailed estimate of buildings and other civil infrastructures.
2. To make students understand various contracts, their suitability and the procurement process involved in construction projects
3. To carry out valuation of real estate and other infrastructure properties

Teaching and Examination Scheme

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE	PA(M)	Viva	PA (I)	
3	2	0	5	70	30	30	20	150

Course Contents

Sr. No.	Topics	Hrs.	% Weightage
1	**Introduction to estimates:** 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	10
2	**Detailed Estimates:** 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	12	30
3	**Rate Analysis and Estimate Preparation**: 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. **Productivity Analysis:** Factors impacting labour productivity, project documents (progress reports, daily reports, time sheets and labor records, etc.), Productivity analysis for different activities	6	15

4	**Tendering and Contracting:** 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	5	12.5
5	**Specification and Conditions of Contract:** 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	10
6	**Valuation:** 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	9	22.5
	Total	**40**	**100**

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 Outcome

Student will be capable of:

1. Preparing approximate estimate and detailed estimate of building and other civil infrastructures
2. To understand tender processing and analyses/assess various contractual provisions in a tender documents
3. Estimation of values of different types of buildings, land and other civil infrastructures

4. List of Tutorials

5. Approximate estimates
6. Quantity Analysis for Building
7. Steel Quantity Analysis for RCC Elements
8. Quantity Analysis of Truss/Steel structures
9. Rate Analysis
10. Measurement & Bill preparation of Building/Civil Infrastructures
11. Specification writing
12. Study of Tender Document & Contractual Risk Assessments
13. Valuation exercises for real estate and civil infrastructures
14. Estimate Preparation Project (To be given in advance and work through the semester)

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N	E Level	C
10	**15**	**20**	**20**	**25**	**10**

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/**

Active learning Assignments (AL) : Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The Power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should submit to GTU.