GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM
COURSE TITLE: ESTIMATING, COSTING & VALUATION
(COURSE CODE: 3350604)

Diploma Programme in which this course is offered	Semester in which offered
Civil Engineering	5th Semester

1. RATIONALE

Building Estimation and Costing is a vital part of Civil Engineering. No project can begin without the total Building Estimation and Costing done by the Engineer. The entire Cost of construction and the infrastructure used for the purpose of construction is estimated and the final costing is done on the basis of which a certain percentage of the Project cost is paid to the Engineer, the Architect and other consultants involved in the project. Valuation is one such important part of Building Estimation and Costing. Valuation is done after the project is complete on the latest trends of the land prices in the market. Therefore, this course has been designed so that the diploma civil engineer is able to prepare estimate and cost of a civil engineering project.

2. LIST OF COMPETENCY

The course content should be taught and learning imparted with the aim to develop theoretical knowledge and skills so that they are able to:-

- **Prepare estimate and cost of a civil engineering project**

3. COURSE OUTCOMES

The theory should be taught and practical should be carried out in such a manner that students are able to acquire required learning out comes in cognitive, psychomotor and affective domain to demonstrate following course outcomes.

i. Explain types of estimate and duties of an Estimator
ii. Undertake rate analysis of civil engineering works
iii. Determine the rates of various items of civil works
iv. Calculate estimated cost of civil construction projects
v. Evaluate the actual value of any property.

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	ESE	PA	ESE	PA	
03	00	04	07	70	30	40	60	200

Legends: L-Lecture; **T** – Tutorial/Teacher Guided Theory Practice; **P** - Practical; **C** – Credit, **ESE** - End Semester Examination; **PA** - Progressive Assessment.

Note: It is the responsibility of the institute heads that marks for **PA of theory, ESE and PA of practical** for each student are entered online into the GTU portal at the end of each semester within the dates specified by GTU.

5. COURSE DETAILS

Unit	Major Learning Outcomes (Major outcomes in cognitive domain)	Topics and Sub-topics
Unit– I Estimation and Modes of Measurement	1a. Explain types of estimate and duties of an Estimator 1b. Distinguish the terms: Overhead charges, contingencies, water charges, provisional sum, prime cost, provisional quantities, spot items, day work.	1.1 estimating 1.2 Types of estimate and Data required 1.3 Overhead charges, contingencies, water charges, provisional sum, prime cost, provisional quantities, spot items, day work. 1.4 General rules for the measurements and its units of different items of civil engineering work.
	1c. Describe various terms used in estimation work	1.5 Quality and duties of good estimator
Unit– II Specifications of Civil Works	2a. Write specification for various items of civil works.	2.1 Importance specification 2.2 Types of specification 2.3 Principle of writing specification
	2b. Estimate the various types of civil engineering works	2.4 Specification of Earthwork in Excavation, cement concrete, Brick masonary, R.C.C. Work, Plastering Work, Painting, Flooring
Unit– III Rate Analysis of Civil Works	3a. State the factors affecting task work 3b. Differentiate between labour rates and market rates of materials	3.1 Task Work and Factors affecting it 3.2 Labour required for different works and Labour rates 3.3 Market rates of construction materials
	3a. Explain the concept of schedule of rates and the purpose of rate analysis 3b. Compare the rate analysis of various types of work and SOR	3.4 Schedule of Rates (SOR) 3.5 Rate analysis and factors affecting it rate analysis 3.6 Rate analysis for earthwork in excavation, C.C.Work, Brick masonry Work, R.C.C. Work, Plastering, flooring work.

Unit	Major Learning Outcomes (Major outcomes in cognitive domain)	Topics and Sub-topics
Unit- IV Estimation of Civil Works	4a. State the various methods of detailed estimation 4b. Estimate the cost of one/ two room building 4c. Estimate the cost of two storied building	4.1 Methods of detailed estimation 4.2 One/ two room building 4.3 Two storied buildings (RCC footings, Column, beams, slab)
	4a. Estimate the cost of RCC retaining wall/ Culverts 4b. State the methods of calculating earthwork for roads and canals	4.4 RCC retaining wall/ Culverts 4.5 Methods of calculating earthwork quantities for roads and canals
Unit– V Valuation of Civil Engineering projects	5a. Differentiate between cost, price and value 5b. Differentiate between depreciation and obsolescence	5.1 Cost, Price and Value 5.2 Types of property and Objects of valuation 5.3 Depreciation and Obsolescence
	5a. Describe different forms of value 5b. Evaluate the actual value of any property. 5c. Describe the procedure for fixing the standard rents.	5.4 Different forms of Value 5.5 Valuation tables and Valuation methods for property and land 5.6 Types of rents and fixing standard rents

6. SUGGESTED SPECIFICATION TABLE WITH HOURS and MARKS (THEORY)

Unit	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Estimation and Modes of Measurement	08	06	08	00	14
II	Specifications of Civil Works	04	02	02	03	07
III	Rate Analysis of Civil Works	04	02	02	03	07
IV	Estimation of Civil Works	16	06	08	14	28
V	Valuation of Civil Engineering projects	10	04	04	06	14
Total		**42**	**20**	**24**	**26**	**70**

Legends: R = Remembrance; U = Understanding; A = Application and above levels (Revised Bloom's taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table. The actual distribution of marks in the question paper may vary slightly from above table

7. SUGGESTED LIST OF EXPERIMENTS

The practical/exercises should be properly designed and implemented with an attempt to develop different types of skills ***(outcomes in psychomotor and affective domain)*** so that students are able to acquire the competencies/course outcomes. Following is the list of practical exercises for guidance.

Note*: outcomes in psychomotor domain are listed here as practical/exercises. However, if these practical/exercises are completed appropriately, they would also lead to development of certain outcomes in affective domain which would in turn lead to development of* ***Course Outcomes*** *related to affective domain. Thus over all development of* ***Programme Outcomes (****as given in a common list at the beginning of curriculum document for this programme) would be assured.*

Faculty members should refer to that common list and should ensure that students also acquire outcomes in affective domain which are required for overall achievement of Programme Outcomes/Course Outcomes

S. No.	Unit No.	Practical Exercises (Major Outcomes in Psychomotor Domain)	Approx. Hrs. Required
1	I	Interpret civil engineering drawings	02
2	I	List of various items to be provided to learn the modes of measurements according to prevailing IS 1200	02
3	II	Collect specifications for at least 10 items of construction work	7
4	III	Analyze rate for at least 10 items of residential building construction	7
5	IV	Estimate in detail for load bearing structure, RCC retaining wall, RCC culverts, earthwork for road works, etc.	28
6	V	Solve at least 10 examples related to various form of value, depreciation, loan amount, annual rent, capitalized value, year purchase, etc.	10
		Total Hours	**56**

8. SUGGESTED LIST OF STUDENT ACTIVITIES

S. No.	Unit No.	Student Activities
i.	III	Compare the actual analysis rates of items with the S.O.R. of P.W.D.
ii	IV	Take measurements of any existing building and calculate its present value.

9. SPECIAL INSTRCTIONAL STRATEGY (If Any)

i. Some live examples of estimation
ii. Visit to architectural firms

10. SUGGESTED LEARNING RESOURCES

A List of Books

S.No.	Title Of Books	Author	Publication
1	Estimating and Costing in Civil Engg.	B.N.Dutta	Ubspd, New Delhi
2	Estimating and Costing in Civil Engg.	S.C.Rangwala	Charotar Publication, Anand,Gujarat
3	Estimating and Costing	M.C.Chakraborty	
4	A textbook of Estimating and Costing	G.S.Birdie	
5	Estimating and Costing	Vazirani and Chandola	

B. List of software

i. Estimator
ii. MS Project.

11. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

- **Prof. Bhavesh V. Modi**, Principal B.V.P.I.T. (D.S.), Umrakh, Bardoli.
- **Prof. Krishnaraj A. Khatri**, Lecturer in Civil Engg. Deptt. B.V.P.I.T. (D.S.), Umrakh, Bardoli.
- **Prof. Anil K. Popat**, Lecturer in Civil Engg. Deptt. Government Polytechnic, Dahod.

Coordinator and Faculty Members from NITTTR Bhopal

- **Dr. Subrat Roy**, Professor, Department of Civil and Environmental Engineering