



# GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code: 3161303

Semester – VI

**Subject Name: Estimation , Specifications and Project Management**

Type of course: Open Elective

Prerequisite: Knowledge of Civil Engineering Drawing

Rationale: Estimating the cost for construction of treatment plant structures and the project management techniques

## Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA (I)	
3	0	0	3	70	30	0	0	100

## Content:

Sr. No.	Content	Total Hrs
1	<b>Construction Technology:</b> a. Subsurface investigation b. Foundations c. Masonry Construction d. Plain and Reinforced Concrete construction e. Plastering	4
2	<b>Elements of Estimating and Costing:</b> <b>(a)Types of estimate:</b> Detailed estimate and approximate estimate, Methods of estimate: Long wall short wall method and centre line method, Units of measurement: Modes and units of measurements, Uses of estimates. <b>(b) Rate Analysis:</b> Purpose and importance of rate analysis, Schedule of Rates; task work per day; procedure for rate analysis for Excavation, P.C.C. work, Cement-concrete work, Brick work, R.C.C. work, plastering, flooring work, painting work. <b>(c) Estimation of Various types of works:</b> Detailed estimation of Two Rooms building, Column structure, Retaining wall, Water storage tank (only in bricks), Underground water storage tank (Brick cum R.C.C.), Overhead R.C.C. storage tank, Septic tank, Sludge drying beds, Clarifier and aeration tank.	22
3	<b>Specifications:</b> Objectives and importance of specifications, Uses of Specifications, Types of specifications, Classification of specifications; Specifications of excavation, DPC, Brick work, Cement-concrete work, R.C.C work, plastering work, Finishing, Flooring work.	2
4	<b>Contracts and Tenders:</b> (a) Contracts: Essential requirements of contract, Types of contract (b) Classification of tenders, Tender notice, Advertisement, Tender form.	2
5	<b>Conditions of Contract:</b> Importance and general provisions, typical clauses of conditions of contract	2



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Sr. No.	Content	Total Hrs
7	<b>Project Management with Network Technique:</b> Project planning, scheduling, controlling, bar chart and mile stone charts, elements of network, development of network, time estimates, time computation, network analysis-PERT and CPM, Determination of critical path using PERT and CPM	10

## Suggested Specification table with Marks (Theory): (For BE only)

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
5	10	15	15	15	10

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

## Reference Books:

1. Estimation & Costing in civil Engineering - B.N. Dutta.
2. Project Planning and Control with PERT & CPM- Dr. B.C. Punamia.
3. Elements of Estimation & Costing – Rangwala.
4. Estimation, costing, specification & valuation in Civil Engg. By M.Chakroborti.

## Course Outcomes:

Sr. No.	CO statement	Marks Weightage
CO1	Define the applications of construction technology	10
CO2	Estimate the quantities and cost of environmental structures	55
CO3	Frame the specifications, contracts and tender documents	15
CO4	Use the concepts of project management	20

## Tutorials:

1. Construction Technology: Sketches related to brick masonry, Types of Foundations
2. Quantity Estimation of column structure from a given drawing
3. Quantity Estimation of Retaining Wall from a given drawing
4. Quantity Estimation of Underground Water Storage Tank (Brick cum R.C.C.) from a given drawing
5. Quantity Estimation of Overhead R.C.C. Water storage tank from a given drawing
6. Quantity Estimation of Sludge drying beds from a given drawing
7. Quantity Estimation of Septic Tanks from a given drawing
8. Specifications of excavation, DPC, Brick work, Cement-concrete work, R.C.C work, plastering work, Finishing, Flooring work
9. Assignments on contracts and conditions of contracts
10. Preparations of Tender Notice for purchase of laboratory instruments
11. Examples on PERT
12. Examples on CPM