



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code: 3153514

Semester – V

Subject Name: Water Supply and Sanitation

Type of course: Professional Elective Course

Prerequisite: Knowledge of subjects Environmental Sciences.

Rationale: To understand the water supply and sewage collection systems in cities.

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	1	0	4	70	30	0	0	100

Content:

Sr. No.	Content	Total Hrs
1	Water supply scheme: Importance & necessity of water supply scheme, Importance and reliability of water works, essentials of water supply engineering. Sources of water: Surface water sources and ground water sources. Quantity of water: Type of demand. Per capita demand, design period, fluctuation in demand of water, factors affecting demand of water.	08
2	Collection and conveyance: Intakes, type of intake, conveyance of water, different type of pipes used in water supply, pipe-joint, laying of pipe, hydrostatic test. Distribution system: Type of distribution system, different layout of distribution system, methods of supplying water, pressures in distribution system, distribution resources and its capacity, type of reservoirs & accessories, design of distribution system, design of pipelines and analysis of complex pipe networks-Hard cross method. Valves and Fittings: Different type of valves, hydrants, meters, stop cock & water tap, pipe fittings, leakage & waste of water factors, affecting losses & wastes.	10
3	Sanitary works: Definitions, sanitary works, objectives of sewage disposal. Systems of sanitation Methods of collection, conservancy systems, collection system, water carriage system, sewerage system.	10



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code: 3153514

	Design of sewers: Design period, per capita sewage flow, ground water infiltration, Estimation of storm runoff, flow assumption, determination of velocity of flow.	
4	Drains and sewers Drains, sewers: sections, sewer material, sewer drawings, corrosion prevention in sewers. Construction and maintenance of sewers: Laying of sewers, jointing of sewers, hydraulic testing of pipe sewers, maintenance of sewers, sewer cleaning equipments and devices. House plumbing: Terms, Plumbing tools, traps and system of plumbing.	08

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
20	20	10	10	05	05

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. Water supply and sewage system – G. Birdie
2. Water supply and sewage system - Steel and McGhee
3. Water Supply & Sewage Systems - K.N. Duggal
4. Water Supply & Sewage Systems – S. K. Garg

Course Outcomes: After learning this course, students will be able to:

Sr.No.	CO statement	Marks % Weightage
CO-1	Identify the sources of water and evaluate resources in terms of quantity and quality.	10
CO-2	Estimate the water demand considering future projection of population	20



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code: 3153514

CO-3	Plan the components of water supply scheme including pipe network, distribution systems, valves and fitting	20
CO-4	Estimate the quantity of sanitary and storm sewage	15
CO-5	Identify the types of sewers and sewer appurtenances.	15
CO-6	Design the components of sewage system.	20