



GUJARAT TECHNOLOGICAL UNIVERSITY

Master of Engineering

Subject Code: 3721717

Semester – II

Subject Name: TREATMENT PROCESS DESIGN AND DRAWING

Type of course: Engineering and Technology

Prerequisite: Sustainable waste Management

Rationale: To understand the concept of sustainability and to restore the environment for pollution abatement

Teaching and Examination Scheme:

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

Content:

Sr. No.	Content	Total Hrs
1	Combination of Unit Processes: Study of fundamental factors affecting choice of treatment units, unit processes and unit operation, hydraulic flow diagram.	4
2	Design of water supply system: Site selection for water treatment plant and its supply network, determination of source yield for ground water and surface water, Design of Flow measuring device, Design of Collection and conveyance system, Preparation of layout plan, Selection of treatment units for surface and ground water sources.	14
3	Concepts of Design Criteria: Hydraulic Detention Time, Flow through velocity, settling velocity, surface loading rate, weir loading rate, organic loading food microorganism ratio, mean cell residence time, dimension ratio, general procedure for design calculation	14
4	Design of Waste water system: Site selection for wastewater treatment plant, Estimation of sewage, Design of Collection and conveyance system, Preparation of detailed layout plan, Selection of conventional treatment units for physiochemical and biological processes, Design of conventional treatment processes, Applicability and limitation for unit processes, challenges and trouble shooting for operating wastewater treatment plant.	8



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Reference Books:

1. Schroeder, Water & Waste Water Treatment, McGraw Hill
2. S. J. Arceivala, Waste Water Treatment & Disposal Marcel Dekker
3. Treatment Disposal Reuse, waste Water Engg., Metcalf Eddy Incorporation Waste Water Engineering Disposal & Reuse, McGraw Hill
4. Qasim, Wastewater treatment Plant
5. Qasim, Waterworks Engineering
6. Benefield and Randall, Biological Process Design for wastewater Treatment
7. G. L. Karia and R. A. Christian, Wastewater Treatment Concepts and Design Approach, PHI Learning Ltd.

Course Outcomes:

Sr. No.	CO statement	Marks % weightage
CO-1	To examine the technical points that are required to set up water treatment plant.	15%
CO-2	To examine the technical points that are required to set up wastewater treatment plant.	15%
CO-3	To study advanced techniques for treating water and wastewater	25%
CO-4	To design water treatment plant and wastewater treatment plant	40%

List of Experiments:

Term work will comprise of assignment and case studies based on natural wastewater system, water conservation systems, smart building, waste to energy, biowastes, Bioremediation etc.

List of Open Source Software/learning website:

1. <https://nptel.ac.in/>