



GUJARAT TECHNOLOGICAL UNIVERSITY

Master of Engineering

Subject Code: 3721802

Semester – II

Subject Name: Treatment Process Design & Drawing

Type of course: Design and Drawing

Prerequisite: Basic concepts and equations regarding water, wastewater treatment and air pollution & control equipments

Rationale: Designing of treatment units and its detailed drawing

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	Flow measuring devices	2
2	Design of Water and wastewater treatment units	
	Preliminary treatment units: 1.Screen 2.Grit chamber	6
	Primary treatment units: 1.Flow equalization 2.Clariflocculator 3.Tube settler 4.Rapid sand filter 5. Plain sedimentation tank	10
	Secondary treatment units: 1.Activated sludge process 2. Rotating biological contractor 3.Upflow anaerobic sludge blanket reactor 4.Sludge digester	12
3	Design of Air pollution control equipment 1. Gravity settling chamber 2. Bag filter 3. Cyclone separator 4. Venturi scrubber	12



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	5. Electrostatic precipitator 6. Absorption tower	
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Reference Books:

1. Waste Water Treatment, disposal & reuse - Metcalf & Eddy
2. Wastewater treatment plant: By Qasim
3. Waterworks Engineering: By Qasim
4. Biological Process Design for Wastewater Treatment: By Benefield and Randall
5. Manual on Sewage Collection and Treatment
6. Manual on Water Supply and Treatment

Course Outcomes:

Sr. No.	CO statement	Marks % weightage
CO-1	Identify the flow measuring device for particular treatment process.	10%
CO-2	Design the conventional and advanced treatment processes for treatment of water and wastewater.	65%
CO-3	Design the air pollution control equipments.	25%

List of Experiments:

Term work will comprise of :

[A] Assignments on the questions related to:

- i. Conventional & modification of Activated Sludge Process,
- ii. Types of aeration devices
- iii. Types of mixing devices
- iv. Flow measuring devices
- v. Filtration systems

[B] Detailed design and drawing of treatment units like clarifloculator, ASP, RBC, Screen, UASB, RSF, Plant hydraulics , Gravity settling chamber, Bag filter, Electrostatic precipitator