

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. SEMESTER : VIII

ENVIRONMENT ENGINEERING

Subject Name: **TREATMENT PROCESS DESIGN AND DRAWING**

Sr. No.	Course Contents	Total Hrs
(A)	Basic Design Considerations: (a) Site Selection (b) Choice of Treatment Processes, Process Train and Comparison of Alternatives. (c) Plant Layout And Hydraulic Profile (d) Flow Measuring Devices	6
(B)	Wastewater treatment unit operations and processes and process diagrams	4
(C)	Design of individual pollution control units from the following units	
	Water and Wastewater Treatment Plant	
1.	Screens	4
2.	Sand Filters	4
3.	Clariflocculator & Tube Settlers	6
4.	Equalization Tank	4
5.	Suspended Growth Biological Process-Activated Sludge Process and its modifications	6
6.	Attached Growth Process- Rotating Biological Contractor	4
7.	Up flow Anaerobic Sludge Blanket Reactor	6
8.	Membrane Bio Reactor (MBR) & MBBR.	6
	Air Pollution Control Devices	
9.	Cyclone Separator	4
10.	Bag filter	4
11.	Venturi scrubber	6
(D)	Drawings: Preparation of detailed working drawings/sketches of the designed units.	During Tutorial Hours

Reference Books:

1. Wastewater Treatment Plants: Planning, Design and Operation (Second Edition) by Syed R Qasim , Published by CRC Press.
2. Design of Water Treatment Plants by Dr A G Bhole.
3. Wastewater Engineering: Treatment and Reuse by Metcalf & Eddy. McGraw-Hill Publication

Term Work:

The term work shall consist of following:

1. Design and drawings of Screens.
2. Design and drawings of Sand Filters.
3. Design and drawings of Clariflocculator
4. Design of Equalization Tank
5. Design and drawings of Activated Sludge Process & its modifications
6. Design and drawings of Rotating Biological Contractor.
7. Design and drawings of Upflow Anaerobic Sludge Blanket Reactor

8. Design and drawings of Membrane Bio Reactor (MBR) & MBBR.
9. Design and drawings of Cyclone Separator
10. Design and drawings of Bag filter
11. Design and drawings of Venturi scrubber.
12. Questions & numericals based on Screens.
13. Questions & numericals based on Clariflocculator
14. Questions & numericals based on Activated Sludge Process & its modifications
15. Questions & numericals based on Rotating Biological Contractor
16. Questions & numericals based on Upflow Anaerobic Sludge Blanket Reactor
17. Sketches on Types of Aeration Systems.
18. Sketches on Types of Sedimentation Tanks.
19. Sketches on Types of Filtration Systems.
20. Sketches on Types of Rotating Biological Contractor.