

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E. Semester: III

Master of Environmental Engineering (Specialization)

Subject Name: **MEMBRANE TECHNOLOGY (Major Elective - IV)**

Sr. No	Course content
1.	Membrane Process : Principal, Types, Classification, Selection, Application, Configuration..
2.	Electrodialysis : Industrial applications, Membrane and their characterization, Electrodialysis stack and its various components.
3.	Design Considerations of Electrodialysis System : Determination of ion exchange capacity, membrane potential, Electrical resistance of ion exchange membrane.
4.	Reverse Osmosis : Theory, Membrane materials, Devices and configurations. Design Consideration of Reverse Osmosis System: Application of RO, Costs, Capital and Operating.
5.	Reverse Osmosis Membrane Bio Fouling : Bio fouling and its prevention, Membrane cleaning, Analysis of foulants, RO concentrate disposal methods.
6.	Other Membrane Processes : Ultra filtration, Nano filtration and their applications

List of Experiments:

1. Waste Water and Waste water Demand projection and generation using different forecasting methods.
2. Physical Unit design for water Treatment
3. Chemical Treatment Unit System Design For water.
4. Preparation of project Report of water Treatment System .
5. Physical Unit design for Waste water Treatment
6. Chemical Treatment Unit System Design For Waste water.
7. Biological Waste water treatment System.
8. Preparation of project Report of Waste Water Treatment System .

Reference Books:

1. Wastewater Treatment Plant Design by WPCF (USA) - Manual of Practice
2. Water & Wastewater Treatment by Schroeder - McGraw Hill
3. Wastewater Treatment & Disposal by S.J. Arceivala - Marcel Dekker
4. Manual of Water Supply by Ministry of Urban Development - Manual of Wastewater Treatment – 1991 Edition (Latest Edition is under preparation)
5. Treatment Disposal Reuse, Waste Water Engineering by Metcalf & Eddy
Incorporation and Waste Water Engineering Disposal & Reuse by McGraw Hill