

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 2

Master of Environmental Engineering

Subject Name **INDUSTRIAL WATER AND WASTEWATER TREATMENT**

Sr.No	Course content
1	Introduction to Industrial Water Treatment : Sources and Quality of Water Required for Different uses and different Industries Treatment of water for cooling, Heating, Steam generation and other process water requirement.
2	Waste Reduction : Methods of volume reduction, Strength reduction, Neutralization, Equalisation and proportioning as related to Industrial waste treatment.
3	Industrial Waste Treatment :Origin, Characteristic and Treatment of major industrial wastes. Pre- and Primary treatment , Adsorption, Ion Exchange and Chemical treatment Processes used for Industrial waste waters
4	Wastewater Treatment Fundamentals :Flow sheets, Physico-chemical and biological processes. Screens comminutors. Grit chambers, Sedimentation, Equalization, Neutralization , Floation and chemical treatment of waste waters.
5	Saline Water Conversion :Ion exchange, Distillation, Electro dialysis, Freezing, Reverse, Osmosis.
6	Economic Aspects of Industrial Waste Treatment Concept of joint treatment of industrial and domestic waste, CETP, Design considerations.

List of Experiments:

1. Colletion of data on Industries located in around the location of institute
 2. Preparation of charts of major Industrial water needs and waste water generation streams
 3. Collection field data of one industry in detail related to its water requirement and waste water generation and treatment facility with the industry.
 4. Treatability study of an industrial effluent
 5. Performance evolution of the existing facilities of typical well established waste treatment industrial plant
 6. Project Preparation of Industrial area or on Specific most polluting Industry
 7. field visit of common effluent treatment plant and its positive points and limitations
- (Sponsored candidate of industry may be given a specific task needed for their need in the area of lacuna prevailing n their units)

Reference Books:

1. Industrial Water Pollution by Nelson L. Nemerow - Addison Wesley Pub. Co.
2. Treatment of Industrial Waste by E.B. Besselièvre and M. Schwartz - McGraw Hill, Kega Kusha Ltd. Publication (latest), International Student Edition
3. Wastewater Treatment Plants Planning Designing & Operation by S.R. Quasim - H.R.W. (Holf Rine Heart & Winstone)
4. Industrial water Quality W. W. Eckenfelder, Jr. Davis L. Fford, Andrew Englande McGraw Hill Publishing Co.(2009 ed)
5. Water Quality and Treatment Hand Book of Public Water Supplies by AWWA - McGraw Hill
6. Industrial Waste Treatment by Gurnham
7. Wastewater Engineering: Treatment and Reuse by George Tchobanoglous Publisher Tata McGraw Hill