

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: I Environmental Management

Subject Name Industrial Wastewater Management

Sr.No	Course content
1.	General: Industrial waters and wastewaters, cost of water pollution abatement as integral component of project, key reference to relevant Indian Standards;
2.	Disposal Standards: Various disposal sinks, effluent and stream standards; theories of water pollution and control: reduction of strength and volume, neutralization and proportioning, equalization suitability of control processes compatible with concentrations, environmental consideration for industrial location;
3.	CETP: Concept of Common Effluent Treatment Plant (CETP), pros and cons of CETP, case studies; Liquid toxic wastes: identification and quantification of toxic wastes, physico-chemical, bio-physical treatment processes for toxic wastes;
4.	Major industrial wastes: Origin, characterization, treatment; Recycling and reuse of wastewater: advanced wastewater treatments such as removal of refractory organics, nitrogen, phosphorus, fluoride and TDS, cost benefit ratios, removal and recovery of metals from industrial wastewater.
5.	Waste minimization, waste exchange and cleaner production: definition of CP and terminology, the need of CP and its benefits, barriers to CP, planning and implementation, role of life cycle analysis in achieving CP goals.

List of Practical's and Term work:

1. List of Practicals
 - I. Characterization of waste water.
 - II. Determination of optimum lime dose for neutralization of acidic wastes.
 - III. Treatability studies for specific industrial wastes – Physico – Chemical treatment
2. Term work will comprise of assignments on the questions related to disposal standards for various sinks, CETP , Advanced Waste water treatment
3. Term paper on industrial waste water treatment and reuse for selected industries.

Reference Books:

1. Industrial Water Pollution: Origins, Characteristics and Treatment By Nelson Nemerow
2. Environmental Engineering: By Peavy, Rowe and Tchobanoglous
3. Surveys in Industrial wastewater treatment – volume 1, 2 & 3 – edited by Barnes, Forster, Hruday.
4. Industrial Wastewater Treatment: By Eckenfelder
5. Wastewater: Treatment, Disposal and Reuse: By Metcalf and Eddy, Tschobanoglous
6. Advanced Wastewater Treatment: By Culp and Culp
7. Introduction to Environmental Engineering: By Davis Mackenzie and Cornwell.