

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 1

Master of Environmental Engineering

Subject Name **Major Elective2.1**
HAZARDOUS WASTE MANAGEMENT

Sr.No	Course content
1	Hazardous Waste Classification :Explosive, Flammable, Volatile, Radio active, Toxic and pathological wastes.Categories of hazardous waste as per schedule of hazardous wastes (Management and Handling) Rules 1989
2	Sources of hazardous Wastes :Refinery, Nuclear power plant, Metal plating industry, Chemical industries, Pesticide manufacturing industries etc.
3	Identification and Characteristics :Spent non-halogenated solvents, waste treatment sludges from various chromium and mercury compounds, scrubber sludge from blast furnaces and coke ovens, fission products from nuclear plant, spent fuels, mine and mill tailing, pathological and surgical wastes, AP.PI. separator sludges for oil refineries.
4	Handling of Hazardous Wastes :Collection of hazardous wastes and care in handling quantities of hazardous wastes generated. Storage of hazardous wastes, transportation and shipment of hazardous wastes.
5	Hazardous Waste Impact Analysis :Impact analysis, Impact on land, ground and surface and ground water
6	Final Disposal of Hazardous Wastes :Site selection, incineration, land filling. Leachates :Treatment and disposal.
7	Standards Applicable to Generators of Hazardous Wastes :Standards of collection, Reception, Treatment, Transport, Storage and Disposal as per Environmental Protection Act, 1986.
8	Hazardous Waste Management :Guidelines. Relevant legislation on hazardous waste management.

List of Experiments: Exercises

1. study of hazardous waste generation and sources
2. study on classification all types of hazardous wastes
3. study of identification and characterization of hazardous wastes
4. study of hazardous waste producing industry with details of points of generation in various forms.
5. exercise on material balance in hazardous waste generating industry.
6. Study of manifestation system of particular hazardous waste with processes including handling, storage, transportation and disposal
7. study on treatment technology of hazardous waste TWO TO THREE minimum.

8. study of relevant standards on hazardous waste generation, storage ,
9. visit report preparation of a hazardous waste case

Reference Books:

- 1.Wastewater Engineering Disposal & Reuse by George Tchobanoglous by Tata Metcalf & Eddy - McGraw Hill 2003edition or later
- 2.Water and Wastewater Treatment by Schroeder - McGraw Hill
- 3.Water & Wastewater Engineering – II by Fiar, Geyer & Okun - John Wiley
- 4.Standard Methods of Testing Water and Waste water Latest Edition Published jointly APHA, AWWWA,WPCF