

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: I Environmental Management

Subject Name Municipal and Hazardous Solid Waste Management

Sr.No	Course content
[A]	Municipal Solid Waste Management:
1.	Integrated Solid Waste Management: History, economics, need, material flows, types of wastes;
2.	Municipal Solid Waste characteristics and quantities, composition and generation; collection systems and design; Linear programming application in collection, transportation and transfer of wastes.
3.	Landfills: Planning, siting, permitting, landfill processes, landfill design, landfill operations, post-closure care and use of old landfills, landfill mining;
4.	Processing of Municipal Solid Waste: storage, conveying, compacting, shredding, pulping, roll crushing, granulating, the pi breakage theorem;
5.	Material Separation: General expressions, picking, screens, float/sink separators, magnets and electromechanical separators, other devices, material separation systems
6.	Combustion and Energy recovery: Heat value of refuse, materials and thermal balances, combustion hardware used in MSW, undesirable effects of combustion.
7.	Biochemical Processes: Methane generation by anaerobic digestion, composting, other biochemical processes.
8.	Application of GIS in locating landfill site.
[B]	Hazardous Solid Waste Management:
1.	Definition, Identification and Classification of Hazardous Solid Waste: Hazardous waste, toxicity, reactivity, infectiousness, flammability, radioactivity, corrosiveness, irritation, bio-concentration, genetic activity, explosiveness;
2.	Hazardous Waste Management: Waste Minimization, Waste Exchange, Recycling;
3.	Treatment technologies: Biological, chemical, Physico-chemical treatment, incineration, stabilization, solidification
4.	Land disposal
5.	Biomedical waste management: sources, generation, storage, transportation, disposal, waste treatment: disinfection, irradiation, incineration.

Reference Books:

1. Solid Waste Management – Tchobanoglous, Tata McGraw Hill publications
2. Solid waste Management – A Vesilind
3. Hazardous Waste minimization: By Harry M Freeman, McGraw Hill publications
4. Hazardous Waste Management: By LaGrega
5. Manual on Solid Waste Management
6. Hazardous Waste Incineration: By Brunners, Calvin R.