

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**DIPLOMA IN ENVIRONMENTAL ENGINEERING**  
**SEMESTER: V**

Subject Name: **Solid Waste Management**

Sr. No.	Course Content
1.	<b>Introduction:</b> 1.1 Introduction 1.2 Definition and Sources of Solid Waste generation 1.3 Types of Solid Wastes 1.4 Composition of Solid waste and its determination. 1.5 Solid waste management and Urbanization 1.6 Impact of Solid Waste on Environment 1.7 Importance of Municipal Solid Waste (MSW) rules, 2000 in SWM
2.	<b>Solid Waste Management Techniques:</b> 2.1 Waste management hierarchy 2.2 Waste prevention 2.3 Waste reduction – Source reduction programme 2.4 Waste audit
3.	<b>Properties of Municipal Solid Waste:</b> 3.1 Physical Properties of Municipal Solid Waste 3.1 Chemical Properties of Municipal Solid Waste 3.3 Biological Properties of Municipal Solid Waste 3.4 Transformation of Municipal Solid Waste
4.	<b>Solid Waste Generations and Collection:</b> 4.1 Quantities of solid waste 4.2 Measurements and methods to measure solid waste quantities 4.3 Solid waste generation and collection. 4.4 Factors affecting solid waste generation rate. 4.5 Quantities of materials recovered from Municipal Solid Waste
5.	<b>Handling, Separation, Transportation and Storage of Solid Waste Management:</b> 5.1 Handling and separation of solid waste at site. Material separation by pick in, screens, float, and separators magnets and electromechanical separator and other latest devices 5.2 Waste Handling and Separation at commercial and industrial facilities 5.3 Storage of solid waste at the sources.
6.	<b>Processing of Solid Waste:</b> 6.1 Processing of solid waste at residence. E.g. storage, conveying, compacting, shredding, pulping, granulating, etc. 6.2 Processing of Solid Waste at Commercial and Industrial site. 6.3 Processing of Plastic Waste

7.	<b>Solid Waste Disposal Techniques:</b> 7.1 Combustion and energy recovery of Municipal Solid Waste, effects of combustion, undesirable effects of combustion. 7.2 Landfill: classification, planning, siting, permitting, landfill processes, landfill design, landfill operations, use of old landfills etc. 7.3 Biochemical Processes: Methane generation by anaerobic digestion, composting and other biochemical processes.
8.	<b>Hazardous Solid Waste:</b> 8.1 Definition, identification and classification of hazardous solid waste. Hazardous waste toxicity, reactivity, infectiousness, flammability, radio activity, corrosiveness, irritation, bio-concentration, genetic activity, explosiveness. 8.2 Biomedical waste, its sources, generation, storage, transportation, and disposal with reference to Biomedical waste rules, 1996. 8.3 e-waste – introduction, health hazard, e-waste management.
9.	<b>Public Involvement and Participation in SWM:</b> Significance, Meaning, Role of Public Education and Public involvement, Technique of Public Involvement.

### Laboratory Experiences:

1. Sources and Composition of Municipal Solid Waste
2. Properties of Municipal Solid Wastes
3. Solid Waste Generations and methods of Collection
4. Handling, Separation, Storage of Solid Waste Management
5. Processing of Solid Waste.
6. Disposal of Municipal Solid Waste Arrange Site visit
7. Hazardous Solid Wastes and its disposal
8. Report preparation on case studies of any one small area of village/ town/ city

### Reference Books:

1. Integrated Solid Waste Management, George Tchobanoglous and Hilary Theisen, Samuel Vigil.
2. Disposal and Recovery of Municipal Solid Waste Michael E Henstock Butterworths, Ann Arbor.
3. Solid Waste Management, P Aarne Vesilign.
4. Environmental Engineering, Mackenzie L Davis and David A. Cornwell.
5. Solid Waste Management, K. Sasikumar and others.