

**CARMEL COLLEGE (AUTONOMOUS), MALA**  
**Department of Chemistry**

**Certificate Course**

**CCSM-01 SOLID WASTE MANAGEMENT**

**SYLLABUS FOR CERTIFICATE COURSE (30 hrs)**

**Module 01: Generation and characteristics of waste(3hours )**

Sources, Types, composition, quantity, sampling and characteristics of waste, factors affecting generation of solid wastes.

**Module 02: Waste collection, storage and transport(9 hours )**

Collection and storage of municipal solid waste; Methods of collection - House to House collection - collection routes; on site storage methods-materials used for containers -Recycling and Reuse of waste -Need for transfer and transport; transfer station-selection of location, operation and maintenance; transportation Methods-manual, Mechanical methods with or without compaction, economy in transportation of waste, optimization of transportation routes.

**Module 03: Waste processing techniques( 6hours )**

Processing techniques-biological and chemical conversion technologies – composting and its methods, Vermi-composting, mechanical composting, In vessel composting, incineration, pyrolysis, gasification.

**Module 04: Disposal of Solid Waste( 12hours )**

Segregation, Volume reduction at source, recovery and recycle; dumping of solid waste-sanitary waste- sanitary landfills-site selection-design and operation of sanitary landfill - leachate and landfill gas management- landfill closure and environmental monitoring-landfill remediation; Municipal solid waste in Indian conditions, legal aspects of solid waste disposal, Plastic waste disposal.



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