INTRODUCTION TO SOLID WASTE MANAGEMENT

(Professional Elective-VI)

Course Code: 15CH1144	L	T	P	C
	3	0	0	3

Course Outcomes :

At the end of the Course, the Student will be able to:

CO 1 State solid waste characteristics and its sources.

CO 2 Identify and analyze different methods of treatment of solid waste

CO 3 Illustrate Industrial practices in solid waste management

CO 4 Discuss the significance of recycling reuse and reclamation of solid wastes

CO 5 Assess the relationships between environmental guidelines, human activities and quality of impacted soil, water and air

UNIT-I (10 Lectures)

SOLID WASTE HISTORY:

Economics and solid waste, Legislation and regulations

MATERIAL FLOW:

Reduction, reuse, recycling, recovery, disposal of solid waste in landfills, energy conservation.

THE NEED OF INTEGRATED SOLID WASTE MANAGEMENT:

Municipal solid waste generation,

MUNICIPAL SOLID WASTE CHARACTERISTICS:

Composition by identifiable items, moisture content, particle size, chemical composition, heat value, bulk and material density, mechanical properties, biodegradability.

UNIT-II (12 Lectures)

Refuse collection systems, commercial wastes, transfer stations, collection of recyclable materials, planning, siting and permitting of landfills.

LANDFILL PROCESSES:

Biological degradation, leachate production, gas production.

UNIT-III (12 Lectures)

Refuse physical characteristics, storing Municipal solid waste, conveying, compacting

SHREDDING:

Use of shredders in solid waste processing, types of shredders used for solid waste processing, health and safety

Pulping, roll crushing, granulating.

UNIT-IV (9 Lectures)

THERMAL CONVERSION:

Combustion or incineration systems, factors affecting efficiency of incinerators, problems associated with incinerator operations, pyrolysis, gasification, pelletization.

UNIT-V (7 Lectures)

BIOLOGICAL PROCESSING:

Composting (aerobic conversion), critical design parameters in composting, types of composting systems, properties of compost, anaerobic conversion, vermiculture, chemical processing,

TEXT BOOKS:

1. William A. Worrellp, Aarne Vesilind "Solid Waste Engineering", 2nd edition, Cengage, 2012.
2. Iqbal H Kahn, Naveed Ahsan " Text book of Solid Waste Management", CBS Publishers, 2013.

REFERENCES:

Cheremisinoff N.P "Handbook of Solid waste management and waste minimization technologies" Butterworth-Heinemann Publisher, 2003.