CEDX 42	SOLID WASTE MANAGEMENT	L	Т	Ρ	С
SDG: 3 & 7		3	0	0	3

COURSE OBJECTIVES:

The objectives of the course are to impart knowledge on **COB1:** sources, types, characteristics and effects of improper disposal of municipal solid waste.

COB2: on-site waste segregation and storage methods

COB3: different methods employed for waste collection and transfer

COB4: various types of waste processing techniques and resource recovery **COB5:** solid waste management rules and components of a land fill.

MODULE I INTRODUCTION TO MUNICIPAL SOLID WASTES 9

Sources and types of solid wastes – Quantity – Factors affecting generation of solid wastes - Characteristics – Methods of sampling and characterization - Effects of improper disposal of solid wastes – Public health effects - Principle of solid waste management – Social & Economic aspects - Public awareness - Role of NGOs.

MODULE II ON-SITE STORAGE & HANDLING

Storage of household waste - Dry, wet and domestic hazardous, On-site storage methods - Materials used for containers – On-site segregation of solid wastes – Public health & Economic aspects of storage – Options under Indian conditions – Critical Evaluation.

MODULE III COLLECTION AND TRANSFER

Methods of Collection – Primary and secondary collection - Types of vehicles –Light commercial vehicles, Four wheeled mini trucks, Skip truck - Manpower requirement – Collection routes - Transfer stations – Selection of location, operation & maintenance - Extended producer responsibility.

MODULE IV OFF-SITE PROCESSING

Processing techniques – Mechanical volume reduction, Thermal volume reduction and Chemical volume reduction – Equipment - Compactors, Hydropulper, Hammer Mill, Shredder, Magnetic Seperators; Resource recovery from solid wastes – composting, incineration, Pyrolysis, Emerging trends in gasification.

MODULE V DISPOSAL OF SOLID WASTE

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Solid Waste management Rules 2016- Salient features- Duties and responsibilities of various authorities - Dumping of solid waste; Sanitary landfills – site selection, design and operation of sanitary landfills – Leachate collection & treatment – Emerging challenges in solid waste management.

L – 45; Total Hours – 45

TEXT BOOKS:

- George Tchobanoglous, Hilary Theisen, Vigil, S. A. Integrated Solid Waste Management, Engineering Principles and Management Issues, McGraw-Hill Education (India) Private Limited, 2014.
- Ramesha Chandrappa, Diganta Bhusan Das, Solid Waste Management Principles and Practice, Springer Berlin Heidelberg, London, 2012
- Ramachandra, T. V. Management of Municipal Solid Waste, TERI Press, New Delhi, 2011
- 4. Sasikumar, K., Sanoop Gopi Krishna, Solid Waste Management, PHI Learning, New Delhi, 2009.

REFERENCES:

- CPHEEO, "Manual on Municipal Solid Waste Management", Central Public Health and Environmental Engineering Organisation, New Delhi, 2016.
- Gomes, Maria Isabel, Martinho, G., Pires, A., Rodrigues, S., "Sustainable Solid Waste Collection and Management", Springer International Publishing, Germany, 2018.
- 3. MSW Management Rules 2016, Govt. of India https://cpcb.nic.in/rules-2/

COURSE OUTCOMES:

At the end of the course the student will be able to

CO1: describe the different sources, types and the effects of improper disposal of municipal solid waste

CO2: describe the storage, segregation and handling of solid waste

CO3: explain the methods of collection of solid waste

CO4: identify the offsite processing techniques and resource recovery from solid waste

CO5: explain the SWM rules and detail the operation of a land fill.

Board of Studies (BoS) :

16th BoS of Civil held on 5.1.2022.

Academic Council:18th

Academic Council held on 24.02.2022

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	РО 10	PO11	PO 12	PSO1	PSO2	PSO3
CO1	-	-	L	-	-	L	L		-	-	-	-	-	-	L
CO2	-	-	L	-	-	L	L		-	-	-	-	-	-	L
CO3	-	-	L	-	-	L	L		-	-	-	-	-	-	L
CO4	-	-	L	-	-	L	L		-	-	-	-	-	-	L
CO5			L			L	L								L

Note: L- Low Correlation M - Medium Correlation H - High Correlation

SDG 3: Ensure healthy lives and promote well-being for all at all ages SDG 7: Affordable & Clean Energy

The knowledge about the management of solid waste and implementing techniques to minimize their adverse impacts on human health and environment will ensure the promotion of a healthy community