

Annexure VII

Programme: **M.Sc. Part-II (Chemistry)**

Course Code: **CHV-501**

Title of the course: **Basic course in Waste Management (Value added course)**

Number of Credits: **02**

Total Hours: **30**

Effective from AY: **2024-25**

<i>Prerequisites for the course:</i>	Should have enrolled for M.Sc. any specialization of Chemistry and Biochemistry	
<i>Course Objective:</i>	To understand the problems related to waste generation and identify methods and process for waste treatment To provide exposure of govt facilities and industrial setup in the state for waste management	
<i>Learning outcome:</i>	Student will be able to understand basic concept of waste management and analyze how day to day human activities relates to various types of waste generation Students will be able to identify methods for waste management for various types of waste. Students will get working exposure of processes and govt and industrial setup in the state for domestic and industrial waste treatment.	
<i>Content</i>		<i>Hrs</i>
Introduction to Waste Management, Principles and Procedures, Types of Waste		15
Solid waste management, Principles, Processing, treatment and disposal of solid waste, Concepts of waste reduction, recycling and reuse. Municipal solid waste and Hazardous waste; Regulatory aspects of municipal solid waste management.		
Solid waste managment: Composting, Incineration, biogas plant, Hazardous waste: Analytical approach for hazardous waste characterization, Hazardous waste treatment technologies , safe disposal, e-waste management		
Sustainability, Environmental impact, Case studies		
Field trips – Solid waste management facilities / Industry facilities in goa (Minimum 2)		15
<i>Pedagogy</i>	Lectures / Seminars /videos/ assignments / presentations / self-study/field trip/study tour or a combination of some of these can also be used. ICT mode should be preferred. Sessions should be interactive in nature to enable peer group learning.	

*Textbooks /
References*

1. Ameer Mubaslat, Introduction to waste management, 2021 ISBN: 978-9957-67-886-9.
2. Ebikapade Amasuomo & Jim Baird, The Concept of Waste and Waste Management, Journal of Management and Sustainability; Vol. 6, No. 4; 2016, 88-96.
3. United Nation Economic and Social Commission for Asia and the Pacific <https://www.unescap.org/sites/default/files/CH08.PDF>
4. Solid Waste Management (Volume I), United Nation Environment Programme, ISBN: 92-807-2676-5
5. Waste to Resources: A Waste Management Handbook, TERI press 2014
6. 6. Manual on Municipal Solid Waste Management, Central Public Health and Environmental Engineering Organisation, Ministry of Urban Development, Government of India 2016

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