

AC – 20/05/2025
Item No. – 6.18 (N) (3a) Sem. IV

As Per NEP 2020

University of Mumbai



Syllabus for Basket of OE Vertical 3	
Faculty of Science	
Board of Studies in Chemistry	
Second Year Programme	
Semester	IV
Title of Paper	Credits
I) Waste Management	2
From the Academic Year	2025-26

Title of Paper: Waste Management

Sr. No.	Heading	Particulars
1	Description the course:	The course aims to provide the information on Waste Management
2	Vertical :	Open Elective
3	Type :	Theory
4	Credit:	2 credits (1 credit = 15 Hours for Theory in a semester)
5	Hours Allotted :	30 Hours
6	Marks Allotted:	50 Marks
7	Course Objectives: • To understand concept of waste, different types and methods of managing it, and the safe handling of chemical waste. • To study solid waste management strategies. • To know the laws, policies, and enforcement tools pertaining to waste management. • To learn about organic waste segregation and composting.	
8	Course Outcomes: Students will be able • To differentiate between types of waste management. • To explain waste management strategies. • To Identify key waste management policies and regulations, with a special focus on local (Indian) practices. • To explain segregation & composting of organic waste.	

9	Modules
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Semester	Module	Description	Credits
IV	I	Introduction to Waste Management	02
	II	Policy instruments on waste management	

Unit	Description	Lecture
I	1. Introduction to Waste Management 1.1. Definition of Waste Management. (1L) 1.2. Types of Waste Management (2L) (a) Hazardous, (b) Recyclable, (c) Biodegradable 1.3. Methods of waste Management (3L) 1.3.1. Recycling 1.3.2. Composting 1.3.3 Chemical Waste Management (i) Definition (b) Packaging (c) Labelling & (e) Storage 1.4. e - Waste Management: (2L) 1.4.1. Define e-Waste 1.4.2. Steps of e-Waste Management (Collection, Classification & recycling.)	08 L
	2. Municipal solid waste collection systems and disposal. 2.1. Collection of solid waste; (5L) 2.1.1. Precautions to be taken during collection of waste. 2.1.2. Collection services and infrastructures; 2.1.3. Examples of collection service and infrastructure; 2.2. Disposal of waste at Institutional level (2L)	07 L
II	3. Policy instruments on waste management: 3.1. Introduction of policy of waste management. (1L) 3.2. Regulatory instruments and enforcement matters. (3L) 3.3. Waste Management Policy and Policy Instruments in India (2L) 3.4. Monitoring and reporting (1L)	07 L
	4. Organic waste composting: 4.1. Definition of organic waste. (1L) 4.2. Importance of Organic Waste Management. (2L) 4.3. Methods of Organic Waste Management (3L) 4.3.1. Composting 4.3.2. Vermicomposting 4.3.4. Organic Waste to Energy (WTE) (2L)	08 L

10 Reference Books

- (1) Introduction to waste management – By Hasan, John Wiley Publication
- (2) Waste Management, Sanitation and Society- By Dr. Amrita Dwivedi, Cambridge Scholars Publications.
- (3) Textbook on Waste Management – By Sangeeta Bora, Lambert Academic publications
- (4) Advanced Organic Waste Management: Sustainable Practices and Approaches- By Hussain, Chaudhary, PhD and Hait, Subrata

(5) Organic Waste Recycling- By Chongrak Polprasert, IWA Publication vol. 6

11	Internal Continuous Assessment: 40%	External, Semester End Examination 60% Individual Passing in Internal and External Examination
12	Continuous Evaluation through: Quizzes, Class Tests, presentation, project, role play, creative writing, assignment etc.(at least 3)	

13 Format of Question Paper: for the final examination

Theory	Credit	No. of Hours	Marks
	02	30	50

Internal Continuous Assessment: 40% (20 Marks)	External, Semester End Examination: 60% Individual Passing in Internal and External Examination (30 Marks)
Continuous Evaluation through: Quizzes, Class Tests, presentation, project, role play, creative writing, assignment etc.(at least 3)	As per the Format of Question Paper
Format of Question Paper: for the final examination	

Question Paper Pattern for 30 Marks:

Semester End Theory Examination:

1. Duration - These examinations shall be of **one-hour** duration.
2. Theory question paper pattern:
 - a. There shall be **02** questions, Question 1 carries 15 Marks based on Unit I and Question 2 carries 15 Marks based on Unit II.
 - b. All questions shall be compulsory with internal choice within the questions.

Question	Particulars	Marks	Questions Based on
Q.1	A) Objective Questions 06 out of 10	06	Unit I
	B) Subjective Questions 03 out of 05	09	
Q.2	A) Objective Questions 06 out of 10	06	Unit II
	B) Subjective Questions 03 out of 05	09	
Total		30	---

Sd/-
Sign of
Dr. Sunil Patil
Coordinator,
Board of Studies in
Chemistry

Sd/-
Sign of
Prin. (Dr.) Madhav Rajwade
Offg. Associate Dean,
Faculty of Science and
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Sign of
Prof. (Dr.) Shivram Garje
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