



जे. सी. बोस विज्ञान एवं प्रौद्योगिकी विश्वविद्यालय, वाए.एम.सी.ए, फरीदाबाद

J.C. BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA

SECTOR -6, MATHURA ROAD, FARIDABAD, HARYANA-121006

(Established vide Haryana State Legislative Act No. 21 of 2009)

'A+' GRADE NAAC Accredited

DEPARTMENT OF ENVIRONMENTAL SCIENCES

LESSON PLAN

Name of the Faculty: Dr. Somvir Bajar
Discipline & Semester: B.Tech. (Mechanical Engineering)
Subject: Waste Management in Our Daily Life
Lesson plan duration: 15 weeks

Department: Mechanical Engineering
Semester/Year: VII/ IV
Subject Code: OES-301A
Academic Year: 2025-26

Topic No.	Topic to be covered	Teaching Aids	No. of Lect/ Hrs Required	Text/ Ref. Books	CO Mapping
UNIT-1: WASTE CONCEPTS					
1	Concept of waste: Definition, characteristics, and composition	BB, PPT	1	R1, R5	CO1
2	Sources of waste generation – domestic, commercial, agricultural	BB, PPT, Discussion	2	R1, R3	CO1
3	Classification of waste – biodegradable, non-biodegradable, recyclable	BB, PPT	1	R1, R2	CO1
4	Sorting and segregation of waste at source (household, community)	BB, PPT, Case Study	2	R1, R7	CO1, CO2
5	Waste collection and storage	BB, PPT, E-Resource	2	R3, R5	CO1, CO2
6	Transportation methods of Waste	BB, PPT, E-Resource	2	R3, R5	CO1, CO2
7	Doubts and Discussions	Discussion	1		CO1
8	Class Test 1	MCQs/Quiz	1		CO1
UNIT-2: WASTE PROCESSING & PREVENTION					
9	Waste prevention at home	BB, PPT, Case Study	1	R2, R4	CO2
10	Waste recycling at home	BB, PPT, Case Study	1	R3, R7	CO2
11	Waste prevention small communities	BB, PPT, Case Study	1	R2, R4	CO2
12	Waste recycling by small communities	BB, PPT, Case Study	1	R3, R7	CO2
13	Reduce, recycle and reuse	BB& PPT	2	R2, R3	CO2
14	Waste processing – Size Reduction	BB& PPT	1	R2, R5	CO2, CO3
15	Waste processing – Volume Reduction	BB& PPT	1	R2, R5	CO2, CO3
16	Doubts and Discussion	Discussion	1	--	CO2
	Class Test 2	MCQs/Quiz	1	--	CO2
UNIT-3: WASTE TREATMENT					
17	Safe disposal of waste	BB& PPT	2	R4, R6	CO3
18	Problems of dumping/burning	BB& PPT	3	R4, R6	CO3
19	Landfills and disease association	BB& PPT	2	R3, R6	CO3
20	Best practices for solid waste disposal	BB& PPT	2	R4, R5, R7	CO3, CO4
21	Doubts and Discussions	Discussion	1	--	CO3
	Class Test 3	MCQs/Quiz	1	--	CO3
UNIT-4: WASTE DISPOSAL & UTILIZATION					
22	Composting	BB& PPT	2	R1, R2	CO4
23	Vermicomposting	BB& PPT	2	R1, R2	CO4
24	Anaerobic digestion- Preparation of biogas and manure from waste	BB& PPT	2	R4, R5	CO4
25	Waste to energy – pyrolysis	BB& PPT	2	R3, R4, R5	CO4
26	Refuse derived fuels	BB& PPT	2	R3, R4, R5	CO4
27	Doubts and Discussions	Discussion	1	--	CO4
28	Class Test 3	MCQs/Quiz	1	--	CO4

Total Hours / Lectures

45

Mode of Teaching:

Blackboard (BB), PowerPoint Presentations (PPT), Discussion, Case Studies, E-tutoring, Online Resources, Demonstrations

LMS/ICT Tools:

Digital Classrooms, DLMS, ZOOM, G-Suite, MS PowerPoint, SWAYAM, and Online Resources (e-PG Pathshala, MoEFCC, CBCB, ENVIS).

Reference Books:

- R1. Agarwal, S. K. (2005). Solid waste management. APH Publishing Corporation.
- R2. Cherry, P. M. (2016). Solid and hazardous waste management. New Delhi: BCS Publishers & Distributors.
- R3. Kaza, S., Yao, L., Bhada-Tata, P., & Van Woerden, F. (2018). What a waste 2.0: A global snapshot of solid waste management to 2050. World Bank Publications.
- R4. Letcher, T. M., & Vallero, D. A. (Eds.). (2019). Waste: A handbook for management. Academic Press.
- R5. Tchobanoglous, G., Theisen, H., & Vigil, S. (1993). Integrated solid waste management: Engineering principles and management issues. McGraw-Hill.
- R6. Wilson, D. C., & Velis, C. (2015). Waste management—Still a global challenge in the 21st century: An evidence-based call for action. Waste Management & Research, 33(12), 1049–1051.
- R7. Zhu, D., Asnani, P. U., Zurbrugg, C., Anapolsky, S., & Mani, S. K. (2007). Improving municipal solid waste management in India: A sourcebook for policymakers and practitioners. World Bank Publications.

Prepared by:

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Assistant Professor

Department of Environmental Sciences

Approved by:

Chairperson

Department of Environmental Sciences

OPEN ELECTIVE - 1
CODE: OES-301A

SUBJECT NAME: WASTE MANAGEMENT IN OUR DAILY LIFE

UNIT 1: WASTE

What is waste? Sources of waste generation; Composition and classification of waste; Sorting and segregation of waste at source of generation (kitchen, garden, residential colonies and commercial areas); waste collection – sample collection bins; storage and transport.

UNIT 2: WASTE PROCESSING AND PREVENTION

Waste prevention and recycling at home, small communities; reduce, recycle and reuse; Waste processing – size and volume reduction.

UNIT 3: WASTE TREATMENT

Safe disposal of waste; open dumping, problems of open dumping and burning; landfills; diseases associated with waste handling; Best practices for solid waste disposal

UNIT 4: DISPOSAL OF WASTE

Composting – vermicomposting, kitchen garden; anaerobic digestion – biogas, manure; waste to energy – pyrolysis, refuse derived fuels.

COURSE OUTCOMES:

After completing this course, the students will be able to:

- Understand the characteristics and types of solid waste.
- Know about various methods for waste processing and prevention.
- Apply the knowledge for waste treatment..
- Get knowledge of final disposal of wastes in daily life.