School of Planning and Architecture: Vijayawada
(An institution of National Importance under the Ministry of Human Resource Development, Govt. of India)
Survey No.4/4, ITI Road, Vijayawada-520008, Andhra Pradesh, India

Department of Architecture

Course: MBEM 1211; Waste Management
Instructors: Karthik Chadalavada
External Theory E:
Contact Periods/ week: 03 Slots each of 55 min. per week
Time Table:
Attendance: Min 75%

Class: I Yr. II Sem. M.Arch & MBEM, 2023-24 A.Y
Internal Assessment: 50
External Theory Exam: 50
Total Marks: 100
Credits: 3
Min. Passing Marks: 50% each in Internal & External Assessment, 50% in Aggregate

Objective: To understand problems of municipal waste, biomedical waste, hazardous waste, ewaste, industrial waste etc; To provide knowledge of legal, institutional and financial aspects of management of solid wastes; To make aware of Environment and health impacts solid waste mismanagement; To understand engineering, financial and technical options for waste management

Outline of the cource: Introduction to Waste Management, Characterization, Collection, Storage and Transportation of waste, Treatment and disposal techniques, Waste Management, Case Studies.

LECTURE PLAN

S. No.	Week	TOPIC OF CLASS LECTURE & DISCUSSION	CLASS ACTIVITIES & ASSIGNMENTS
1	Week 1	Unit-1; Introduction; Comprehensive understanding of waste management General introduction including definitions of solid waste including municipal, hospital and industrial solid waste;	Lecture & Discussion
2	Week 2	Unit-1; Introduction; General introduction including definitions of solid waste including municipal, hospital and industrial solid waste; legal issues and requirements for solid waste management	Lecture & Discussion
3	Week 3	Unit-1; Introduction; legal issues and requirements for solid waste management, Health and environmental issues related to solid waste management.	Lecture & Discussion
4	Week 4	Unit-2; Characterization, Collection, Storage and Transportation Sampling and characterization of solid waste;	Lecture & Discussion Submission of Internal Assessment-I
5	Week 5	Unit-2; Characterization, Collection, Storage and Transportation Analysis of hazardous constituents in solid waste including QA/QC issues;	Lecture & Discussion
6	Week 6	Unit-2; Characterization, Collection, Storage and Transportation Methods of waste collection, collection techniques,	Lecture & Discussion
7	Week 7	Unit-2; Characterization, Collection, Storage and Transportation waste container compatibility, waste storage requirements, transportation of solid wastes.	Lecture & Discussion

8	Week 8	Unit-3;Treatment and disposal techniques Treatment and disposal techniques for solid wastes–composting, vermin-composting, autoclaving	Lecture & Discussion
9	Week 9	Unit-3;Treatment and disposal vermin-composting, autoclaving techniques Treatment and disposal techniques for solid wastes	Lecture & Discussion Mid-semester week
10	Week 10	Unit-3;Treatment and disposal microwaving, incineration, non-incineration thermal techniques, use of refuse derived fuels, landfilling.	Lecture & Discussion
11	Week 11	Unit-3;Treatment and disposal use of refuse derived fuels, landfilling and Sanitary/Engineered Landfill.	Lecture & Discussion
12	Week 12	Unit-4; Waste Management Waste reduction at source – municipal and industrial wastes Material	Lecture & Discussion
13	Week 13	Unit-4; Waste Management resource recovery/recycling from solid wastes Waste minimization and concept of industrial ecology and industrial symbiosis;	Lecture & Discussion
14	Week 14	Unit-4; Waste Management Economics of on-site vs. off-site waste treatment and disposal (individual vs. common disposal).	Lecture & Discussion
15	Week 15	Unit-5; Case studies Case examples of Energy development and Management of urban waste services. The case studies are covered in each individual topics also	Lecture & Discussion Submission of Internal Assessment-III
16	Week 16	Final Internal Assessment & end of academic session	Lecture & Discussion

Tentative break-up of Internal Assessment Marks:

S.No.	CATEGORIES OF EVALUATION	MARKS
1	Internal Assessment-I	15
2	Mid-Semester Examination	20
3	Internal Assessment-III	15
	Total	**50**

Outcome: The student will be having an idea on different types of waste and will gain knowledge how to deal with waste in terms of technical and financial aspects

References:

1. Batstone R., Smith J.E. (Jr.) and Wilson D. (1989) The Safe Disposal of Hazardous Wastes-the Special Needs and Problems of Developing Countries, The World Bank Technical Paper No. 93, Vol. I, II and III, Washington, DC, The World Bank.
2. Central Public Health and Environmental Engineering Organization (CPHEEO) (2000) Manual on Municipal Solid Waste Management, New Delhi, Controller of Publications.
3. Freeman H.M. (1988) Standard Handbook of Hazardous Waste Treatment and Disposal, New York, McGraw-Hill.
4. Prüss A., Giroult E. and Rushbrook P. (1999) Safe Management of Wastes from Healthcare Activities, Geneva, World Health Organization.
5. SW-846 (1980) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Washington, DC, USEPA, Available at http://www.epa.gov/epawaste/hazard/ testmethods/sw846/index.htm.
6. Tchobanoglous G., Theisen H. and Vigil S. (1993) Integrated Solid Waste Management: Engineering Principles and Management Issues, New York, McGraw-Hill.
7. Vesilind P.A., Worrell W.A. and Reinhart D.R. (2001) Solid Waste Engineering, Australia, CL-Engineering.

sd/-
(Karthik.Chadalavada)
Course Instructor:

sd/-
(Dr. Uma sankar Basina)
Head of the Department: