

Lesson Plan- CE-EENV5 - Municipal Solid Waste Management
Academic year 2015-16
(Semester commenced in Feb - 2016)

Instructional objectives no.	Instructional objectives (IO)
1	To know the sources and types of solid waste.
2	To learn the importance of methods of collection and selection of location for solid waste.
3	To understand the various methods of disposal of solid waste

Student outcomes

Student outcome number	Student outcome (SO)
a	an ability to apply knowledge of mathematics, science, and engineering
e	an ability to identify, formulate, and solve engineering problems
k	an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Mapping of Instructional Objectives (IOs) with Student Outcomes (SOs)
CE-EENV5 – Municipal Solid Waste Management

Instructional objectives		Student Outcomes			
		a	e	k	
1.an ability to apply knowledge of mathematics, science, and engineering		X	X		
2.an ability to identify, formulate, and solve engineering problems		X	X		
3.an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.		X	X		
CE-EENV5	Municipal Solid Waste Management	Lecture Hours (L)	Tutorial Hours (T)	Practical Hours (P)	Credits (C)
		3	0	0	3
	Prerequisites CE0307, CE0308				

Lesson Plan – 2015-16

Revision: dated 24/02/2016

Lecture No.	Topic	No. of hours	IOs	SO	Reference
1.	Introduction- concepts of handling municipal solid waste- overview of syllabus	2	1,2,3,	a,e,k	1-4
UNIT-I SOURCES AND TYPES OF MUNICIPAL SOLID WASTES					
2.	Introduction - Sources and types of solid wastes	1	1	a,e	1,2,3,4,
3.	quantity – factors affecting generation of solid wastes	1	1	a,e	1,2,3,4
4.	characteristics – methods of sampling and characterization	1	1	a,e	1,2,3,4
5.	effects of improper disposal of solid wastes	1	1	a,e	1,2,3,4
6.	public health effects- principle of solid waste management	1	1	a, e	1,2,3,4
7.	social & economic aspects- public awareness - role of NGOs- legislation	2	1	a,e	1,2,3,4
UNIT-II ON-SITE STORAGE & PROCESSING					
8.	On-site storage methods	1	1	a,e	1,2,3,4
9.	materials used for containers	1	2	a,e	1,2,3,4
10.	on-site segregation of solid wastes	2	2	a,e	1,2,3,4
11.	public health & economic aspects of storage	1	2	a,e	1,2,3,4
	Cycle Test - 1	2			
12	options under Indian conditions	1	1	a,e	1,2,3,4
13	Critical Evaluation of Options	1	1	a,e	1,2,3,4

Lecture No.	Topic	No. of hours	IOs	SO	Reference
UNIT-III COLLECTION AND TRANSFER					
14	Methods of Collection	1	2	a,e	1,2,3,4
15	types of vehicles – manpower requirement	2	2	a,e	1,2,3,4
16	collection routes- transfer stations	1	2	a,e	1,2,3,4
17	selection of location	1	2	a,e	1,2,3,4
18	operation & maintenance	1	2	a,e	1,2,3,4
19	options under Indian conditions	1	2	a,e	1,2,3,4
	Cycle Test - II	2			
UNIT-IV OFF-SITE PROCESSING					
20	Processing techniques and Equipment	2	3	a,e,k	1,2,3,4
21	Resource recovery from solid wastes	2	3	a,e,k	1,2,3,4
22	composting	2	3	a,e,k	1,2,3
23	incineration- Pyrolysis	2	3	a,e,k	1,2,3
24	options under Indian conditions	1	3	a,e,k	1,2,3
UNIT-IV DISPOSAL OF SOLID WASTE					
12.	Dumping of solid waste	1	3	a,e,k	1,2,3
13.	sanitary landfills	1	3	a,e,k	1,2,3
14.	site selection	1	3	a,e,k	1,2,3
15.	design and operation of sanitary	2	3	a,e,k	1,2,3
16.	Leachate collection & treatment	1	3	a,e,k	1,2,3
	Model Examination	3			
	Total hours	45			

The faculty members handling the course may conduct surprise test according to their convenience. However a question paper in hard copy as well as key shall be made available for the surprise test. The process shall be same as that of cycle tests.

TEXT BOOKS

1. George Tchobanoglous et al., “Integrated Solid Waste Management”, McGraw-Hill Publishers, 2003.

REFERENCES

1. Biltewski .B, HardHe .G, Marek .K, Weisbach.A, and Boedicker .H, “Waste Management”, Springer, 2004.
2. Manual on Municipal Solid Waste Management, “CPHEO”, Ministry of Urban Development, Government of India, New Delhi, 2010.
3. Landreth.R.E and Rebers .P.A, “Municipal Solid Wastes–problems and Solutions”, Lewis Publishers, 2002.
4. Bhide .A.D. and Sundaresan .B.B, “Solid Waste Management in Developing countries

Faculty handling the courses

Sl. No.	Faculty name
1	Dhanasekar S
2	Mirunalini V