

SARDAR PATEL UNIVERSITY
Programme & Subject: B.Sc (Environmental Science)
Semester: VI
Syllabus with Effect from: November-2013

Paper Code: US06CENV03	Total Credit: 3
Title of Paper: Waste Management	

Unit	Description in detail	Weightage (%)
I	<p>Water and waste water treatment Water pollution: Types of water pollution- Pollution of ground water (Arsenic poisoning, fluorosis), Marine pollution, Oil Spill and Oil Leaks, Coastal Pollution, Sources, Causes and consequences, harmful effects, Eutrophication of Lakes. Water treatment processes; screening, aeration, chemical pre-treatment (Coagulation, flocculation, and sedimentation), Secondary treatment-filtration, tertiary treatment. Waste water treatment: Flow rates and characteristics of wastewater, Wastewater treatment process-pre treatment primary, secondary, and tertiary, Sewage irrigation, sewage farming.</p>	25%
II	<p>Solid waste Management Types of Solid Waste- Municipal waste, Industrial Waste, Hazardous Waste, Bio-medical Waste, Typical generation rate of various waste. Municipal Solid Waste- Definition, Sources, Classification, Properties of MSW, Factors affecting generation of waste and its Management- Onsite handling and processing, Collection of MSW types of collection system, Storage and transport, Waste Disposal, Recycling of waste</p>	25%
III	<p>Hazardous waste Definition, sources, properties, treatment system of hazardous waste; incineration, wet oxidation and fluidized bed combustion, risk involved in handling hazardous waste. Bio-Medical Waste Definition, Sources, Categories, Collection and handling in hospitals, Ministry classification and colour coding for Bio-medical waste.</p>	25%
IV	<p>Industrial waste treatments: Raw Material used, Manufacturing process, Sources of Wastes and alternate use of wastes and treatment of waste material in the following industries: Sugar Industry, Paper and pulp Industry, Pharmaceuticals, Tanning Industry, Textile Industry, Dairy Industry, Fertilizers, Petroleum refinery</p>	25%

Basic Text & Reference Books:

- Waste Water treatment for Pollution Control - Soli J. Arceivala (1998) Tata Mc. Graw Hill, New Delhi
- Water and Wastewater Engineering - treatment, disposal and Reuse – Metcalf and Eddy Inc (1993) Tata Mc. Graw Hill, New Delhi
- Handbook of solid waste management - Frank Kreith, George Tchobanoglous
- Waste management and resource recovery - Charles R. Rhyner
- River pollution - L.B.Singh, P.N.Pandey, Bhola Mahto, R.K.Singh
- Hazardous waste management - Gaynor W. Dawson, Basil W. Mercer
- Environmental Chemistry - A.K.De (1995), Wiley Eastern.

