

# Solid & Hazardous Waste Management - Web course

## COURSE OUTLINE

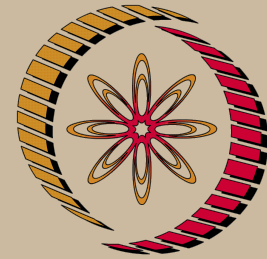
This course provides an indepth understanding of solid and hazardous waste characteristics and management. Some basics of radioactive waste characterization and handling are also provided.

### Contents:

Solid Waste analysis and characterization, Hazardous waste Characterization Environmental legislation for solid and hazardous waste disposal and transport Risk Assessment, Waste minimization and resource recovery, Waste stabilization techniques, Chemical, physical and biological treatment Landfill design for Sanitary and Hazardous Wastes, Incineration.

## COURSE DETAIL

Sl.No.	Topics	No. of Hours
1.	<b>Relevant Regulations</b> Municipal solid waste (management and handling) rules; hazardous waste (management and handling) rules; biomedical waste handling rules; flyash rules; recycled plastics usage rules; batteries (management and handling) rules	1
2.	<b>Municipal Solid Waste Management – Fundamentals</b> Sources; composition; generation rates; collection of waste; separation, transfer and transport of waste; treatment and disposal options	6



NP-TEL

# NPTEL

<http://nptel.ac.in>

## Civil Engineering

### Additional Reading:

1. Basics of Solid and Hazardous Waste Mgmt. Tech. by [Kanti L. Shah](#) 1999, Prentice Hall.
2. Solid And Hazardous Waste Management 2007 by [S.C. Bhatia](#) Atlantic Publishers & Dist.

### Hyperlinks:

1. <http://www.iswa.org>.
2. <http://enfor.nic.in>.

### Coordinators:

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3.	<b>Hazardous Waste Management – Fundamentals</b> Characterization of waste; compatibility and flammability of chemicals; fate and transport of chemicals; health effects	4
4.	<b>Radioactive Waste Management – Fundamentals</b> Sources, measures and health effects; nuclear power plants and fuel production; waste generation from nuclear power plants; disposal options	6
5.	<b>Environmental Risk Assessment</b> Defining risk and environmental risk; methods of risk assessment; case studies	5
6.	<b>Physicochemical Treatment of Solid and Hazardous Waste</b> Chemical treatment processes for MSW (combustion, stabilization and solidification of hazardous wastes); physicochemical processes for hazardous wastes (soil vapour extraction, air stripping, chemical oxidation); ground water contamination and remediation	8
7.	<b>Biological Treatment of Solid and Hazardous Waste</b> Composting; bioreactors; anaerobic decomposition of solid waste; principles of biodegradation of toxic waste; inhibition; co-metabolism; oxidative and reductive processes; slurry phase bioreactor; in-situ remediation	6
8.	<b>Landfill design</b> Landfill design for solid and hazardous wastes; leachate collection and removal; landfill covers; incineration	4

## References:

1. John Pichtel Waste Management Practices CRC Press, Taylor and Francis Group 2005.
2. LaGrega, M.D. Buckingham, P.L. and Evans, J.C. Hazardous Waste Management, McGraw Hill International Editions, New York, 1994.
3. Richard J. Watts, Hazardous Wastes - Sources, Pathways, Receptors John Wiley and Sons, New York, 1997.