

(ELECTIVE – D/II)
4/4 B.Tech. SEVENTH SEMESTER

CE7T6D

SOLID WASTE MANAGEMENT

Credits: 3

Lecture: 3 periods/week

Internal assessment: 30 marks

Tutorial: 1 period /week

Semester end examination: 70 marks

Objectives:

- To know about Sources, types, Composition of MSW
- To learn methods to handle, separate and store the solid waste at source of collection
- To know the method of transfer and transport the solid waste after the collection from the source.
- To understand the planning, design and operation of sanitary land fills
- To know the Management of Bio medical, Plastic and E-waste

Learning outcomes:

After the exposure to the subject, student knows

- The present scenario of solid waste management in India and the challenges due poor management of solid waste from hygienic point of view.
- On-site and Off-site processing techniques - recycling, pyrolysis, compositing, incineration and disposal by sanitary land fill and its planning, design and operation.
- The present burning challenges of Management of Bio medical waste, Plastic waste and e-waste

UNIT-I:

SOURCES, TYPES AND COMPOSITION OF MUNICIPAL SOLID WASTE:

Sources, Types, Composition of Solid Waste, Effects of improper disposal of solid waste, public health effects, Types of materials recovered from MSW.

UNIT-II

WASTE HANDLING, SEPARATION AND STORAGE:

On - site handling and separation at solid waste, on - site storage of solid waste, options under Indian conditions.

UNIT- III

COLLECTION OF MUNICIPAL SOLID WASTE:

Methods of collection, equipment, types of vehicles, man power requirement, collection.

UNIT-IV

TRANSFER AND TRANSPORT OF MUNICIPAL SOLID WASTE:

Need for Transfer operations, Transfer Stations, Selection of Location of Transfer Stations, Transport means and methods.

UNIT-V

OFF-SITE PROCESSING:

Size Reduction, Separation, Density separation, Magnetic Separation, Pyrolysis, Composting, Incineration, and Recycling of materials of Municipal Solid Waste.

UNIT-VI

DISPOSAL OF SOLID WASTE:

Disposal of Solid Waste – Sanitary land Fills, Site selection, Planning, Design and operation of Sanitary landfills, Leachate collection & treatment, composition of land fill.

UNIT-VII

BIO-MEDICAL WASTE AND HANDLING:

Biomedical waste management issues, waste generation, current practices in health care facilities, environmental concerns, labeling and colour coding for waste storage, collection, transportation, treatment, common treatment facility, disposal.

UNIT-VIII

PLASTIC AND E-WASTE MANAGEMENT:

Dangers of Plastics, Recycling of Plastic waste, Disposal of plastic waste. Health Hazards of E- waste, E- waste Management.

Learning resources

Text books:

1. Integrated Solid waste management, (2nd edition) by Hilary Theisen and Samuel Vigil A., Goerge Tchobanolous, McGraw Hill International, 1996.
2. Design of Land Fills and Integrated Solid waste management,(3rd edition) by Amalendu Bagchi, John Wiley & Sons, 2004.

Reference books:

1. CPCB Manual on solid waste Management, 2010,2011.
2. Solid waste management by Sasikumar, K., Sanoop Gopi Krishna, PHI Learning Ltd, 2009.
3. Solid waste management, Academic foundation by Urvashi Dhamija, New Delhi, 2006.

Web Reference books: NPTEL