ESE524 WASTE MANAGEMENT 39 hrs.

Course Outcomes:

CO1 Discuss about the production of waste from different sources.
CO2 Understand different methods of solid waste management and liquid waste treatment.
CO3 Learning different type of waste released to the environment and their sources.
CO4 Know various methods of liquid waste treatment and solid waste management which help in entrepreneurship opportunities.

UNIT I (13 hours)

Waste: Introduction, classification - Solid waste and liquid waste. Solid waste - Definition, classification and components; Municipal, industrial, domestic, hazardous, biomedical waste. Environmental standards - emission standards, drinking water standards. Effects of solid waste on environment; physical and chemical properties of solid waste.

UNIT II (13 hours)

Solid waste Management: Physical methods- sorting, salvaging, Chemical methods- incineration and other thermal treatments and Biological methods- composting, sanitary landfilling, bioreactors. Waste management and utilization of plantation crop wastes, aquatic weeds, kitchen, garden and poultry waste. Recycling and reuse of solid and liquid wastes.

UNIT III (13 hours)

Liquid waste: Sewage and effluents, effect of liquid waste on environmental components. Treatment of liquid waste- physical methods-Screening, grit chamber, sedimentation, chemical

methods-chlorination, disinfection, ion exchangers, reverse osmosis and biological methods-Trickling filters, Activated Sludge Process, oxidation ponds, septic tanks and Imhoff tanks. Disposal of textile, radioactive, pharmaceutical, refinery, detergent and leather waste.

References:

1. Agrawal, K.C. 2001. Fundamentals of Environmental Biology, Nidhi Publishers, Bikaner, India.
2. Diwakar Rao, P.L. 1990. Pollution control Hand book, Utility Publications Ltd., Secunderabad. India.
3. Hosetti, B.B. and Arvind Kumar.1998. Environmental Impact Assessment and Management, Daya Publishing House, Delhi.
4. John Arundel, Sewage and Industrial Effluent Treatment, Blackwell Science Publishers.
5. Metcalf and Eddy, Waste Water Engineering, McGraw-Hill International.
6. Schmitz, R.J. 1996. Introduction to water pollution biology. Asian Books Pvt. Ltd., NewDelhi.