MANGALORE UNIVERSITY

Department of Biosciences

MSc Environmental Science

ESE512 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 from different sources.
CO4 Know various methods of liquid waste treatment and solid waste management.

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, chemical and biological methods. Microbiological treatment of solid wastes – composting, land farming, 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. Biological treatment of liquid wastes - aerobic and anaerobic treatment of sewage and effluents. Physical, chemical and biological treatment of liquid waste. Disposal of textile, radioactive, pharmaceutical, refinery, detergent and leather waste.

References:

1. Agrawal, K.C. Fundamentals of Environmental Biology, Nidhi Publishers, Bikaner, India (2001)
2. Diwakar Rao, P.L. Pollution control Hand book, Utility Publications Ltd., Secunderabad. India (1990)
3. Hosetti, B.B. and Arvind Kumar. Environmental Impact Assessment and Management, Daya Publishing House, Delhi(1998)
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. Introduction to water pollution biology. Asian Books Pvt. Ltd., New Delhi (1996)