SYLLABUS

Environmental Biotechnology

NBT-602

Unit-I

Environment, Types of Environmental pollution: Air, Water, Land, Radioactive pollution, Measurement of environmental pollution, Microbiology and biochemistry of pollution abatement, Biodegradation methods, Aerobic and anaerobic treatment methods of solid and liquid wastes, Minimum National Standards for Waste Disposal.

Unit II

Physico-chemical characteristics of waste material, Availability of waste material, Microbiological and biochemical aspects of anaerobic digestion, Microbial strain improvement for anaerobic processes, Factors influencing anaerobic digestion processes, Some important alternative fuels.

Unit III

Analytical techniques for environmental monitoring: Introduction, estimation of total volatile solids, lignin, cellulose, hemicelluloses, Detection of bacteria, Bacteriological examination of water by multiple tube fermentation, Biomarkers.

Unit IV

Design of bioreactors for liquid waste treatment: Introduction, Physical, Chemical and Biological methods: Activated sludge process, Trickling Filters, Rotating biological contactors, Anaerobic treatment of wastewater, Stoichiometry and design kinetics for waste treatment processes.

Unit V

Solid waste management: Introduction, Treatment processes for solid wastes, Thermal conversion process, Biological conversion process, landfill bioreactor for solid waste treatment, Biodegradation methods, minimal national standards for waste disposal, Economical and social aspects of waste treatment