MLPC3002 INDUSTRIAL WASTE TREATMENT AND MANAGEMENT (3-0-0)

Course Objectives:

- To explore the fundamentals of industrial waste generation and its effects on the environment.
- To study the various waste treatment techniques and its management.

Module-I: (06 Hrs)

Introduction: Types of industries and industrial pollution, Characteristics of industrial wastes, Population equivalent, Bioassay studies, effects of industrial pollutants on water body, land, environment and human health.

Module-II: (06 Hrs)

Liquid waste: characteristics of wastewater such as colour, odour, pH, TDS, TSS, BOD, COD etc.
Treatment Technologies: Equalisation, Neutralisation, Removal of suspended and dissolved organic solids, Chemical oxidation, Adsorption, Removal of dissolved inorganics. Wastewater reclamation concepts, Residue management. Dewatering and Disposal

Module-III: (06 Hrs)

Solid waste: Classification, sources and characteristics of solid waste, collection, storage and transportation.
Solid waste Treatment system: Reuse, Recycling and byproduct recovery, Land filling methods, Incineration, Composting process. Ultimate disposal of solid waste
Collection, storage and disposal of hazardous waste, E-waste management and processing.

Module-IV: (06 Hrs)

Gaseous waste: Classification, sources and characteristics of gaseous waste. Treatment techniques: Absorption, collections, precipitation. scrubbers and filters
Industrial waste: Pollution from Major Industries: Sources, characteristics, waste treatment flow sheets for mining industry, steel industry, thermal power plants etc.

Module-V: (06 Hrs)

Environmental legislation related to prevention and control of industrial effluents and hazardous waste.
Waste management Approach, Waste Audit, EIA, Volume and strength reduction. Material and process modifications.

Course Outcome:

CO1: To explore the requirement of industrial waste treatment
CO2: To gain knowledge on industrial liquid waste generation and treatment
CO3: To acquire the concept of solid waste generation and treatment
CO4: To acquire knowledge of gaseous waste generation and industrial practices
CO5: To gain knowledge of environmental legislation related to industrial waste

Text Books

1. Wang L. K., Hung Y. T., Lo H.H., Yapijakis C., Handbook of Industrial and Hazardous Wastes Treatment, CRC Press Inc, 2004
2. Nemerow N.L., Industrial Waste Treatment: Contemporary Practice and Vision for the Future, Butterworth-Heinemann Inc, 2006

Reference Books:

1. Bishop, P.L., “Pollution Prevention: Fundamental & Practice”, McGraw Hill, 2000.
2. Stephenson R.L. and Blackburn J.B., “Industrial Wastewater Systems Hand book”, Lewis Publisher, New York, 1998
3. Freeman H.M., “Industrial Pollution Prevention Hand Book”, McGraw Hill Inc., New Delhi, 1995.