

# **AMB23 ENVIRONMENTAL ENGINEERING**

## **UNIT-1 INTRODUCTION TO ENVIRONMENT**

Concept of ecology and ecosystem, environmental pollution (Water, soil and air) noise and thermal pollution, their sources and effects.

## **UNIT-2 SEWAGE AND WASTE WATER TREATMENTS**

Anaerobic and aerobic treatment, conventional and advanced treatment technology, methanogenesis, methanogenic, acetogenic, and fermentative bacteria- technical process and conditions, emerging biotechnological processes in waste - water treatment.

## **UNIT-3 SOLID WASTE MANAGEMENT**

Landfills, composting, earthworm treatment, recycling and processing of organic residues.

## **UNIT-4 BIODEGRADATION OF XENOBIOTIC COMPOUNDS**

Organisms involved in degradation of chlorinated hydrocarbons, substituted simple aromatic compounds, polyaromatic hydrocarbons, pesticides, surfactants and microbial treatment of oil pollution.

## **UNIT-5 BIOREMEDIATION AND BIORESTORATION**

Reforestation through micropropagation, development of stress tolerant plants, use of mycorrhizae in reforestation, use of microbes for improving soil fertility, reforestation of soils contaminated with heavy metals.

## **UNIT-6 MICROBIAL LEACHING AND MINING**

Extraction of metals from ores; Recovery of metals from solutions; Microbes in petroleum extraction; Microbial desulfurization of coal.

## **UNIT-7 ENVIRONMENTAL BIOTECHNOLOGY IN AGRICULTURE**

Biofertilizers and microbial inoculants, biopesticide, bioinsecticides, bioherbicides

## **UNIT-8 BIOFUEL**

Plant derived fuels, Energy crops, Biogas, Bioethanol, biohydrogen

## **UNIT-9 ENVIRONMENTAL GENETICS**

Degradative plasmids, release of genetically engineered microbes in environment.

## **UNIT-10 BIOSAFETY AND BIETHICS IN BIOTECHNOLOGY**

## **UNIT-11 ENVIRONMENTAL LAWS AND POLICIES**

### **Reference Books**

1. Environmental Biotechnology by Alan Scragg (1999); Longman.