



Semster-6

BRANCH	Subject Title	Subject Code
B.Sc. (Biotechnology -MAJOR)	Environmental Biotechnology	BTM1-161

Course learning outcomes

On successful completion of this course, the students will be able to:

1. Deep understanding of existing and emerging technologies that are important in the area of environment and the principles and techniques which underline the environmental issues including air and water pollution.
2. Empowers the students with the knowledge of Domestic waste water treatment, Classification of wastewater treatment (physical, chemical and biological)
3. Students learn about concepts of Biodegradation, Biodegradation of hydrocarbon, and Measurement of biodegradation. Bioremediation- Concept Methods of Bioremediation (In-si and Ex-situ Bioremediation), and Xenobiotic biodegradation
4. Learners will understand the concept of biodiversity: conservation and management, rules and acts.

Unit 1

Environmental Pollution: Definition, principles and scope of ecology types of pollution, Oil pollution, Methods for the measurement of pollution; Methodology of environmental management - the problem solving approach, its limitations.

Unit 2

Solid and Water wastes: sources and management (composting, vermiculture and methane production). Treatment of waste water, primary, secondary & Assessment of water quality.

Unit 3

Global Environmental Problems: Ozone depletion, UV-B, green -house effect and acid rain. Biogas Production

Unit 4

Degradation of Xenobiotic in Environment. Ecological considerations, decay behavior & derivative plasmids; Hydrocarbons, substituted hydrocarbons, surfactants, pesticides, microbial leaching. Bioremediation of contaminated soils and waste land.



Unit 5

Techniques and Applications:

Methods of monitoring Pollution; Biological methods; Detection methods for DO, BOD, Pathogen monitoring by heterotrophic plate count; Multiple tube method; Membrane filtration methods; Strategies for controlling pathogen transfer, Chemical methods- Detection methods for COD, pH, alkalinity, TSS, TDS, Total organic carbon, oil, grease etc.; Biosensors for pollution

Practical's:

1. Isolation of Cyanobacteria (blue green algae).
2. Estimation of nitrate.
3. Estimation of nitrite.
4. Estimation of ammonia.
5. Determination of biological oxygen demand (BOD) of water sample.
6. Determination of chemical oxygen demand (COD) of water sample.
7. To study air born microbes by agar plate technique.
8. To study pollution stress by chlorophyll and carotenoid ratio from algae sample.
9. To study of effect of heavy metal on growth of bacteria.