MANGALORE UNIVERSITY

Department of Biosciences
MSc Environmental Science

ESS405 ENVIRONMENTAL BIOTECHNOLOGY

Course Outcomes:

CO1 *Discuss the relationship between biotechnology and biodiversity*
CO2 Introduce organic farming such as vermitechnology and its applications.
CO3 Understand the technologies for the control and prevention of various environmental pollutants.
CO4 Study how waste can be converted to a useful product.

UNIT I (13 hours)

Biotechnology and Biodiversity: Conservation and utilization methods, their merits and demerits. Role of Biotechnology in energy production and management. Biosensors – types, response and applications of biosensors. Advantages of microbiosensors. Biochips - biosurfactants.

UNIT II (13 hours)

Biotechnological approaches for the degradation of petrochemical, tannery, industrial wastes, natural and synthetic dyes, semisolid sludge and paper and distillery effluents. Technologies for environmental monitoring with special reference to prevention and detection. Concept of GMOs and genetic engineering approaches to waste treatment and environmental pollution management.

UNIT III (13 hours)

Biotreatment of waste. Biofilters - types and applications. Biofertilizer - importance and classification. Vermitechnology - vermicomposting and vermiculture. Role of biotic and abiotic factors in production of vermicompost. Organic farming and its applications. Microbial cellulolytic degradation of organic waste.

References:

1. Pradipta Kumar Mohapatra. Text book of Environmental Biotechnology
2. Indu Shekhar Thakur. Text book of Environmental Biotechnology
3. Dubey, R.C. Text book of Biotechnology
4. Singh, B.D. Text book of Environmental Biotechnology