



MANGALORE UNIVERSITY

Department of Biosciences
MSc Environmental Science

ESS454 ENVIRONMENTAL TOXICOLOGY

Course Outcomes:

CO1 Introduce the importance of toxicology in environmental science.

CO2 Learn toxicity testing to detect environmental toxicants.

CO3 Understand various terminologies used in toxicology.

CO4 Describe various toxicants found in the environment.

UNIT I (13 hours)

Introduction to toxicology, scope of toxicology, subspecialties of toxicology, description and terminology of toxic effects, factors influencing toxicity, drug toxicity, biochemical basis of toxicity – mechanism of toxicity and receptor mediated events, acute and chronic toxicity. Selective toxicity. Dose response relationship-graded response time action curves, threshold limit value, LC₅₀/LD₅₀, Margin of safety and toxicity curves.

UNIT II (13 hours)

Bioaccumulation and Biomagnifications of toxic materials in food chain, Toxicology of major pesticides-Environmental impacts of pesticides, biotransformation, biomonitoring, programs and parameters of biomonitoring, concept of bioindicator, bioindicator groups and examples. Basic concepts of Environmental forensics.

UNIT III (13 hours)

Concepts of Bioassay- types, characteristics. Importance and significance of bioassay, field based microbial bioassay for toxicity testing, particulate matter sources, health impacts of specific particulate matter, chronic and acute effects of particulate matter on respiratory system, mechanism of impact of particulate matter on cardio vascular system.

References:

1. Meera Asthana and Astana, D.K. Environmental pollution and Toxicology, Alka Printers (1990).
2. Sharma, P.D. Environmental biology and Toxicology, Rastogi and Lamporary, (1994).
3. Sood, A., Sarup and Sons, Toxicology, New Delhi (1999).
4. Park, J.E. and Park, K. Text book of Preventive and Social Medicine, Banosidas Bharat Publishers, Jabalpur (1985).
5. Anisa Basheer, Environmental Epidemiology, Rawat Publication, Jaipur, New Delhi (1995).