

MANGALORE UNIVERSITY
DEPARTMENT OF BIOSCIENCES

M.Sc. ENVIRONMENTAL SCIENCE

ESS 553 ENVIRONMENTAL TOXICOLOGY

39 hrs.

Course Outcomes:

- CO1 Study the process of metabolism of toxic substances.
- CO2 Learn about pesticides.
- CO3 Understand the toxicity of alcohol, tobacco and its products.
- CO4 Describe various toxicants found in the atmosphere.

UNIT I (13 Hours)

Introduction, definition and various facets of toxicology; Kinds of toxicity, time and dose response relationships; factors influencing the toxicity; Bioassay. Metabolism of toxic substances: biomagnification, biotransformation and detoxification; Effects of environmental toxicants- sub cellular, cellular, individual, population and ecosystem levels.

UNIT II (13 Hours)

Atmospheric toxicants: Major sources, types and standards; Primary pollutants-Carbon monoxide, sulphur oxides, nitrogen oxides, particulate matter, hydrocarbons, asbestos and CFC's; Secondary pollutants; Impact of air pollutants on climate-Acid rain, photochemical smog, global warming, ozone depletion and haze. Toxicity of Alcohol, tobacco and its products, food additives.

UNIT III (13 Hours)

Pesticides: Definition, classification; Insecticides: Organochlorines, Organophosphates and carbamates. Poisoning and treatment; Herbicides, fungicides, rodenticides, endocrine disrupters. PCBs and Dioxins. Toxic risk assessment: Methods, monitoring, importance and surveillance of risk assessment. Safety standards: Safety measures, safety regulations, protective practices and devices.

References:

1. Boudou, A. 1997. Aquatic toxicology. Vol. I and II.
2. Diwakar Rao, P.L., 1990. Pollution control Hand book, Utility Publications Ltd., Secunderabad. India.
3. Eaton, A. D., Clesceri, L.S. and Greenberg, A. E. 1995. Standard Methods for the Examination of Water and Wastewater, APHA, Washington.
4. Gupta, P.K. and Salunke, D.K. 1985. Modern Toxicology. Vol. I, II and III. Metropolitan Publications, Delhi.
5. Hommadi, A.H., 1990. Environmental and Industrial safety. Indian Bibliographic Bureau, Delhi.
6. Jorgensen, S.E., Modelling in Ecotoxicology. Elsevier, Amsterdam.
7. Lewin, S.A. et al., 1988. Ecotoxicology: Problems and approaches. Springer - Verlag, Tokyo, New York.
8. Lewin, S. A. et al., 1989. Ecotoxicology: Problems and approaches. Springer - Verlag, Tokyo, New York.
9. Moriarty, F., 1975. Pollutants and animals: A factual perspective. George Allan & Unwin Ltd., London.
10. Omkar, 1995. Concepts of Toxicology. Chand & Co., Jallandar.

11. Schmitz, R.J., 1996. Introduction to water pollution biology. Asian Books Pvt. Ltd., New Delhi.
12. Trivedi, P.R. and Sudarshan K., 1995. Global environmental issues. Commonwealth Publications, New Delhi

