

BSS505ECOTOXICOLOGY

39hrs

Course Outcomes:

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

- CO 1. Know the principle of bioassays for assessment of toxicity.
- CO 2. Understand how the biotransformation and detoxification of xenobiotics occurs
- CO 3. Gain the knowledge how to do the toxic risk and environmental impact assessments.
- CO 4. Understand various atmospheric toxicants and consequences of air pollution, acid rain, photochemical smog, global warming, ozone depletion and haze.
- CO 5. Gain in-depth knowledge of the adverse effects of alcohol, tobacco, food additives, petroleum and petroleum products
- CO 6. Understand the impact of pesticides and metal toxicity
- CO 7. Know antidote therapies for pesticide poisoning.

Unit I (13 hours)

Introduction, definition and various facets of ecotoxicology; Kinds of toxicity; time & dose-response relationships; factors influencing the toxicity; Bioassay- toxicity testing; Role of US-FDA. Metabolism of toxic substances: biomagnification, biotransformation and detoxification; Effects of environmental toxicants- sub cellular, cellular, individual, population and ecosystem levels. **Toxic risk assessment:** Methods, monitoring, importance and surveillance of risk assessment; Environmental Impact Assessment.

Unit II (13 hours)

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

Unit III (13 hours)

Pesticides: Definition, classification, usage and exposure; Insecticides: Organochlorines - DDT, cyclohexane, aldrin and endosulfan poisoning and treatment; Organophosphates and carbamates-Examples, sources, effects and treatment; herbicides, fungicides, rodenticides, endocrine disrupters. PCBs and Dioxins. Metal toxicity - History, sources, emissions, effect of mercury, cadmium, arsenic and lead on metabolism and environment. Poisoning - antidote.

References:

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