BSS505ECOTOXICOLOGY

39hrs

Course Outcomes:

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

CO 1. Know the principle of bioassays for assessment oftoxicity.
CO 2. Understand how the biotransformation and detoxification of xenobiotics occurs
CO 3. Gain the knowledge how to do the toxic risk and environmental impactassessments.
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 petroleumproducts
CO 6. Understand the impact ofpesticides and metal toxicity
CO 7. Know antidotetherapiesforpesticidepoisoning.

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 ImpactAssessment.

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 andhaze.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 endosulfanpoisoning and treatment; Organophosphates and carbamates-Examples, sources, effects and treatment; herbicides, fungicides, rodenticides, endocrine disrupters. PCBs andDioxins.Metal toxicity - History, sources, emissions, effect of mercury, cadmium, arsenic and lead on metabolism and environment. Poisoning - antidote.

References:

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