



DRAVIDIAN UNIVERSITY
Centre for Off-Campus Education & Research
Syllabus for M.Phil/Ph.D Environmental Science
Paper II: Broad Field

UNIT - I

Ecosystem – Definition – Components – Structure – Types – Functions – Interrelationship of different ecosystems – Food chain – Food web – Productivity – Ecological energetics – Energy flow in the ecosystem. **Environmental Toxicology:** Introduction of Toxicology – History and Types of Toxicology – Toxicity (LD^{50} and LC^{50}) – Hazards – Risk Benefits – Risk ratio to tolerance limits – Acceptable daily intake – Threshold Value – Pesticide Toxicology – Detoxification – Resistance and Metabolism – Pesticide – Pesticide Classification – Pest Surveillance – Pest resistance – Residue and Effect – Heavy Metal Toxicology – Toxicology of some Hydrocarbons – Industrial Toxicology and Risk Assessment.

UNIT - II

Public Health: Public Health Programmes – Objectives and Scope – Urban and rural Health – Sanitation – Malarial Control Measures – HIV/AIDS – Domestic and Residential Waste Disposal Studies Introduction to toxicology and toxicological Chemistry – Toxicants – Dose-Response Relationships – Reactions of acids and bases on surfaces - Toxic chemicals in the environment – Biochemical aspects of As, Cd, Pb, Hg, CO, O₃, PAN, Pesticides, MIC and carcinogens in air.

UNIT - III

3. Basic principles – Beer-Lambert's Law – Salient features – Instrumentat Atomic Absorption Spectrophotometer (AAS) ion and applications of UV-VIS Spectrophotometry – Colorimetry – Flame Photometry. Basic principles – Paper Chromatography – Thin Layer Chromatography – Ion Exchange Chromatography – Higher Performance Liquid Chromatography – Gas Chromatography – Instrumentation and applications.

UNIT - IV

Sampling and analysis of SO₂, NO_x, NO₂, CO₂, fluoride, hydrocarbons and particulates – Cryogenic sampling – Impinges – Scrubbers – Adsorption – Absorption for analysis of SO₂, NO₂, CO₂, fluoride and hydrocarbons – Automobile emissions – Types and their control methods – Autocyclic engines – Gaseous pollutant monitoring – Particulate – Ringleman Scale – Dosimetry – High volume samples – Analysis and control of particulate matter. Sampling, analysis and prevention – Determination of pH, DO, BOD, COD, Solids, colour, turbidity, various forms nitrogen, phosphates, fluorides, sulphates, hardness, heavy metals, oil and grease, phenols, pesticides and radio nuclides.

UNIT - V

Conservation and Management of Biodiversity: Types of conservation – In-situ and Ex-situ conservation – Concept of germ plasma preservation and gene banks – Community Biodiversity – Registers and their importance – National Biodiversity Strategy and Action Plan Programme – Protected Area Management Plan – Biodiversity Bill 2002 – Patent Act Agenda 21 – National Policies and Acts [Wild Life (Protection) Act,1972] related to biodiversity. **Forest Resources:** Forest cover in India and the World – Importance – Desertification – Forest Wealth – Afforestation – Vanasamrakshna Samithi in A.P. – Agroforestry – Social Forestry – Joint Forest Management Strategy for Forest Conservation.

Wild Life: Resources – Importance – Benefits – Wild life Extinction – Causes for Extinction – List of Endanger species in India and in the World – Ecological approach in wild life management – Eco Tourism – Wild Life projects in India – Sanctuaries and National Parks In India – Man and Bio sphere Programme – Aesthetic type of Conservation by TTD.
