

ENVIRONMENTAL CHEMISTRY

Module-I

Structure of atmosphere, Properties of Air, Types of Air Pollution Sources: Natural and Anthropogenic Sources, Classification and Chemistry of Major Air Pollutants, Thermodynamics of air pollutants, Atmospheric photochemistry, Chemical and Photochemical Reactions in atmosphere, PAH, VOCs, Acid Rain, Depletion of Stratospheric Ozone. Control of Gaseous Pollutants, Green fuel and their environmental impacts. Principles and Application of Water Chemistry.

Module-II

Unique Properties of Water, Water Quality Parameters: physico-chemical, biological and bacteriological parameters, Water Quality Criteria and Standards, Water Pollution: Heavy Metal Pollution and its Abatement, Detergents and Phosphates, Eutrophication, Chemical Methods of Water and Wastewater Treatment, Removal of Dissolved Organics and Inorganics, Removal of Nitrogen and Phosphates, Water disinfection, Xenobiotics.

Module-III

Nature and Importance of Soil, Soil Properties, Acid-Base and Ion-exchange Reactions in Soils, Macro and Micronutrients, Colloidal chemistry of Soils, Fertilizers and Other Soil Amendments, Soil Pollution: Heavy Metals and Radio- nuclides in Soil, Degradation of natural substances, Remediation of Metal Contaminated Soil.

Module-IV

Characteristics of Hazardous Wastes, Classification of Hazardous Wastes, Effects and fate of Hazardous wastes.

Books and References :

1. Environmental Chemistry - Stanley E. Manahan, 5th Ed., Lewis Publishers, 1995.
2. Chemistry for Environmental Engineering and Sciences (5th Ed)- - CN Sawyer, PL McCarty and GFParkin, Tata McGraw-Hill ed., New Delhi, 2003.
3. Aquatic Chemistry -W.Stumm& JJ Morgan, John Wiley & Sons, Inc, 3rd Ed., NY-1995.
4. Water Chemistry - V.L.Snoeyine and D.Jenkins, John Wiley and Sons, Inc, NY-1980.
5. Principles and Application of Aquatic Chemistry - FMM Morel & JG Hering, John Wiley & Sons, Inc, NY,1993.