

**BES – E – 502      Environmental Chemistry and Instrumentation**

**UNIT – I**

Fundamentals of environmental chemistry: Stoichiometry, Gibbs' energy, Henry's law, chemical potential, chemical equilibria, acid-base reactions, carbonate system, the solubility of gases in water, carbonate system, unsaturated and saturated hydrocarbons.

**UNIT – II**

Chemical composition of Air: Classification of elements, chemical speciation, particles, ions and radicals in the atmosphere, Transport media, transport of pollutants in the air.

**UNIT – III**

Water chemistry: Chemistry of water, the concept of DO, BOD, COD, dispersion of pollutants in groundwater, biochemical processes in water involving microorganisms.

**UNIT – IV**

Inorganic and organic components of soil, Nitrogen pathways, NPK in soil and their interaction. Soil pollution control. Industrial waste/ effluents and heavy metals in soil and their interactions.

**UNIT – V**

Principles of analytical methods: Microscopy (Scanning & Transmission) Colorimetry, Flame photometry. Spectrophotometry, Chromatography Atomic Absorption Spectrophotometry, Electrophoresis and Respirable Dust Sampler (RDS) .