6. Course contents

Unit-I

- **Overview of the environment:**

Overview of the environment, terminologies, Components of Earth: Lithosphere, atmosphere, hydrosphere and biosphere, Concept of black body radiation and albedo, zero-dimensional energy balance model.

6 h

Unit-II

- **Air Pollution and Control:**

Primary and Secondary air pollutants, CFC, Smog (oxidizing and reducing), important environmental issues: depletion of the ozone layer, Acid Rain, Greenhouse effect and global warming, Controlling measures: Baghouse filter, cyclone separator, electrostatic precipitator, catalytic converter and scrubber.

7 h

Unit-III

- **Water Pollution and Control:**

Types and sources of water pollutants, wastewater treatment techniques: ultrafiltration, aerobic and anaerobic treatment, Reverse osmosis, electrodialysis, disinfection by chlorination, ozonization, modern water purification system, significance of water quality parameters like Hardness, water softening process (permutite), WHO guidelines for drinking water.

7 h

Unit-IV

- **Soil pollution and Solid Waste management:**

Soil pollution: Sources of pollutants and mitigation measures.
Types of solid wastes: heavy metal, bio-medical and radioactive wastes, toxic and biochemical effects of solid wastes, solid waste management (landfilling, incineration, composting)

6 h

Unit-V

- **Green Chemistry and EIA**

Basic principles of green chemistry with examples, Matrices to explain greenness, R^4M^4 model, life cycle analysis. Importance, scope and principles of EIA with a case study.

4 h