

Paper No-18: Environmental Geosciences

Theory:

Concept and definition of Environmental Geology. **(6 Lectures)**

Mass Wasting, Formation and Types of Landforms and Soil.

Land use pattern, classification and techniques.

Concepts of natural and techno ecosystems and their inter-relationships (atmosphere, hydrosphere, lithosphere and biosphere).

Environmental Impact Assessment **(15 Lectures)**

Principles, procedures and purpose of environmental impact assessment (EIA).

Environmental Management Plan (EMP) studies and issues in EIA.

EIA regulations and procedure in India. Basic environmental laws.

Case studies of EIA for projects in Indian scenario.

Biodiversity and Pollution **(7 Lectures)**

Concept of biodiversity, Environmental changes- natural and manmade.

Quality and contamination of water.

Waste Disposal, ETP (Effluent Treatment Processes), Nuclear waste

Air, Water, Soil and Noise pollution.

Case studies of contamination due to urbanization, industrialization and mining.

Hazards **(8 Lectures)**

Mechanism of earthquakes, landslides, floods.

Natural and Manmade hazards,

Impact of natural hazards on long and short term environmental conditions.

Preparation of hazard zonation maps.

Project Titles (Extendable):

- EIA study for specific project.
- Water quality interpretation for certain projects and their impact.
- Landuse study for certain projects and their impacts.
- Biodiversity study of parts of Delhi regions.
- Creation of Hazard Zonation Maps.

12 rounds of student presentations will be arranged in Groups on different topics covered under Theory

Practical: (12L)

- Study of seismic and flood-prone areas in India.
- Classification of soil types and their interpretations.
- Classification of water types and their interpretations

- Online assignments from science courseware site.
- Preparation of Landuse/Landcover map.
- Evaluation of environmental impact of air, water pollution, landslides, deforestation, and building construction in specified areas.

Suggested Books:

1. Keller, E.A., 1978. *Environmental Geology*, Bell and Howell, USA.
2. Subramaniam, V., 2001. *Textbook in Environmental Science*, Narosa International.
3. Valdiya, K.S., 1987. *Environmental Geology – Indian Context*. Tata McGraw Hill.
4. Morris. P. & Therivel. R., 2001, *Methods of environmental impact assessment*, 2nd Ed. Spon Press, New York, With a chapter on GIS and EIA by A.R. Bachiller & G. Wood, p. 381-401.