

## MGS 404: ENVIRONMENTAL GEOLOGY

**Skills, employability and entrepreneurship:** This is an interdisciplinary subject with the links of chemistry, physics, life and computing sciences. This is useful to identify human impacts on the mother's natural environment especially with regards to the industrialization, urban development, tourism, and mitigating geo-hazards. Students emerge from this field have opportunities to work in environmental research labs, and government departments.

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| <b>Unit 1</b> | Earth and its Environment: Introduction; Lithosphere, Hydrosphere and Atmosphere. Lithosphere; Earth's interior, structure and composition of Earth's crust, constituents of Earth's material. Soil profile, Soil Erosion - causes and effects, silting of estuaries and reservoirs, soil conservation measures. | 8 hrs |
| <b>Unit 2</b> | Hydrosphere: global water distribution, Surface water bodies, glaciers, Water pollution – surface water, groundwater, marine water and their impacts. Hydrographs.                                                                                                                                               | 8 hrs |
| <b>Unit 3</b> | Atmosphere: Earth's atmosphere - evolution, structure and composition. Layer-wise characteristics, causes and effects of atmospheric pollution – acid rain, global warming, greenhouse effect, urban heat islands and heat wave.                                                                                 | 8 hrs |
| <b>Unit 4</b> | Geological hazards: Earthquake, volcanic eruption, landslide, droughts, floods - their significance, causes, preparedness and mitigation. Seismic zones of India. CRZ Act and Coastal zone management.                                                                                                           | 8 hrs |
| <b>Unit 5</b> | Environmental considerations related to civil engineering and mining projects. A few case studies.<br>Interactive sessions of teaching to enhance students-teacher interactions through hands-on demonstrations and exercises in the recent advancement of the subject related to the curriculum.                | 8 hrs |

### List of References:

- Physical Geology – Foster Robert, J. (1975).
- Ecology, Environment and Pollution - A. Balasubramaian (1995) M/s Indira Publishers, Mysore.
- Atmosphere, Weather and Climate: An introduction to Meteorology – Narora, S. B. Saunders Co., Philadelphia.
- Physical Geology - A. N. Strahler
- R.W. Tank: Focus on Environmental Geology (p.256)
- Disaster Management: Dr. Ranita Nagar - APH publishers.
- Disaster Management: 3 Volumes set - APH publishers.
- Management of Natural and Man-made Disasters: Aradhana Salpekar - Jnanadha Prakashana.
- Future Disasters: Dr. Priya Ranjan Trivedi - The Global Open University.
- Management of Flood, Tropical Cyclones, Storms: Kadambari Sharma - Jnanadha Prakashana.
- Landslides types Mechanism and Modelling: J. Clague and Douglas Stead.
- Fundamentals of Weather and Climate. 2<sup>nd</sup> ed.: Mcilveen and Robin - OUP
- Marine Pollution Control and Management: Dr. Tanmoy - Jnanadha Prakashana.
- Water Pollution: Tripathi- Ashish Publishers.
- Water: Characteristics and Properties: Neelima Rajavaidya - APH Publishers.