**Course Title: Environmental Geology** **Course Code:** EG-02OE
**Credits:** 2 (2-0-0-0) **Max. Marks: 50**

**Course Objectives:**

- Introduce students to the interdisciplinary nature of Environmental Geology, focusing on Earth system interactions, natural cycles, and soil processes that support environmental sustainability.
- Develop understanding of major geological hazards and their impacts on human environments, along with principles of hazard prevention and mitigation strategies.
- Provide knowledge of geological considerations in infrastructure planning and environmental management, promoting responsible and sustainable use of Earth resource

**Learning Outcomes:** After completing the course, students will be able to:

- Understand Earth system processes, environmental interactions, and soil dynamics.
- Identify environmental hazards and assess related geological risks.
- Apply geological knowledge to infrastructure safety and hazard mitigation.

**Course Syllabus (Revised)**

**UNIT I: Environmental Systems and Earth Processes (16 Hours)**

- Environmental Geology: Concept and interdisciplinary approach
- Understanding earth processes
- Natural ecosystems on Earth and their interactions: Atmosphere, Hydrosphere, Lithosphere, Biosphere
- Cycles in Earth System: Rock cycle, Water cycle, Geochemical cycle, Carbon cycle, Biogeochemical cycle

**UNIT II: Environmental Hazards and Engineering Applications (16 Hours)**

- Soil: Formation, classification, and degradation
- Landslides: Slope stability, Causes, Prevention and mitigation
- Floods: Causes, impacts, and mitigation
- Earthquakes: Causes, impacts, and mitigation
- Dams: Foundation materials, Structural, environmental and geologcial considerations, Causes of failure, Seismicity

- Tunnels: Geological structures, Environmental and Geological considerations, Role of water table, Seismic considerations.