Name of Programme: M. Sc. Applied Geology
Course Code: GEO-625
Title of the Course: Environmental Geology
No of Credits: 03
Effective from AY: 2023-24

Prerequisites for the course	Students should have undergone M.Sc. Semester I and II.	
Objective	To impart knowledge about the basics of environmental geology. To understand the interaction of humans with the environment. To create awareness about different natural and manmade hazards.	
Content	**Module 1** Scope and concepts of environmental geology, human population growth and sustainability. Ecosystem, lithosphere, hydrosphere, cryosphere and atmosphere. Assessing natural and manmade hazards, risks and their mitigation measures: Mass movements, deforestation, volcanic eruption, seismic hazard, flood, drought and related case studies.	15 hours
	Module 2 Global warming - industrialization, urbanization, urban environments and their impact. Exploitation of fossil fuels. Sea level changes and causative factors. Coastal processes: Natural and anthropogenic hazards and mitigation. Medical Geology: Trace elements and their implications on health, controls on elemental intake.	15 hours
	Module 3 Hydrology and pollution: Impact assessment of degradation and contamination of surface and groundwater quality due to industrialization and urbanization; organic and inorganic contamination of groundwater and its remedial measures. Geological and hydrogeological aspects of waste disposal, site selection for solid waste disposal-sanitary landfills. Surface and subsurface disposal of toxic, metallic and radioactive wastes. Planning and management of hazardous waste. EIA legislative measures in India**.**	15 hours
Pedagogy	Lectures, case studies, discussions and assignments.	
References/ Readings	1. Keller, E. A. (2012). *Introduction to Environmental Geology* (5th edition). 2. Merrits, D. Wet, A. de and Menking, K. (1997). *Environmental Geology: an Earth System Science Approach.* W. H. Freeman, New York. 3. Montgomery, C. W. (2010). *Environmental geology.* (9th Edition) Professor Emerita, Northern Illinois University 4. Montgomery, C. W. (2020). *Environmental geology.* (11th Edition) Professor Emerita, Northern Illinois University	

	5. Pipkin, B. W., Trent, D. D., Hazlett, R., & Bierman, P. (2013). *Geology and the Environment.* Cengage Learning. 6. Valdiya, K. S. (2013). *Environmental Geology: Ecology, Resource and Hazard Management.* McGraw-Hill Education.
Course outcomes	1. Students will learn about the concepts of environmental geology. 2. Recognize natural and manmade hazards and reasons associated. 3. Suggest mitigation measures related to different environmental problems related to geology. 4. Students will be able to prepare maps delineating various types of natural and manmade hazards.