COMMON POOL OF GENERIC ELECTIVES

Credit distribution, Eligibility and Pre-requisites of the Course GE-4

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-4 Natural Hazards and Mitigation (L3, T1)	**4**	**3**	**1**	**0**	**12th Pass**	**Nil**

Learning Objectives

The main objective of this course is to teach students how to evaluate risks and implement mitigation strategies. This course introduces students to the concept of disaster risk reduction and gives a foundational understanding of natural hazards around the world with a focus on India. This course also lays the foundation for advanced study in climate change impacts, environment science, sustainability, and disaster management.

Learning outcomes

After going through this course, student will know the genesis of major natural hazards of the world, the impact of climate change and understand the disaster management system of India. The students will be able to assess the risk of natural hazards to a specific place and suggest the basic disaster risk reduction measures and emergency plan.

SYLLABUS OF GE-4
Theory (45 hours)

UNIT – I (9 Hours)
Detailed contents
Introduction to natural hazards: Concept of hazards, vulnerability, exposure, risk and disaster. Major natural and manmade hazards and their impact.

UNIT – II (9 hours)
Detailed contents
Hydrometeorological hazards: Floods, storms/cyclone, cloudburst, heat and cold waves, genesis of hydrometeorological hazards, extreme events.

UNIT – III (9 Hours)
Detailed contents
Geological hazards: Geological processes and hazards. Different forms of mass movement: landslide, subsidence, debris flow; Volcanic hazards: major volcanic eruption; Earthquake and secondary hazard: Tsunami, snow avalanche.

UNIT – IV (9 Hours)
Detailed contents
Climate change and pandemic: Climate change, global warming, sea-level rise, impact of climate change on natural resources; Global climate agreements. Pandemics; other natural hazards.

UNIT – V (9 Hours)
Detailed contents
Hazard mitigation: Hazard zonation; Early warning system; Engineering measures. Hazard/disaster profile of India. Disaster management cycle; Different stakeholder in disaster management; Disaster mitigation structure in India; Emergency plan.

Tutorial (30 hours)
Students in small batches or groups will be assigned different exercises about the natural hazards and resolve the key issues to handle and mitigate.

Essential/recommended readings
Edward Bryant (2005). Natural Hazards. Cambridge University Press
Smith, Keith, (2013). Environmental hazards: assessing risk and reducing disaster: Routledge Taylor & Francis Group. London.

Suggestive readings
Edward Bryant (2005). Natural Hazards. Cambridge University Press
Smith, Keith, (2013). Environmental hazards: assessing risk and reducing disaster: Routledge Taylor & Francis Group. London.
Stephen Marshak, (2013). Essential of Geology, W W Norton & Co Inc, New York
Edward A. Keller; Duane E. DeVecchio (2014). Natural Hazards: Earth's Processes as Hazards, Disasters, and Catastrophes. Routledge.
Bell, F.G., 1999. Geological Hazards, Routledge, London.
David C. Alexander (1993). Natural Disasters. CRC Press