

Name of Programme: M. Sc. Applied Geology

Course Code: GEO-631

Title of the Course: Natural Hazards and Disaster Management

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 provide an overview of the common natural hazards and their dynamics and to inculcate the basic concepts of disaster management	
Content	Module 1 Understanding the Concepts and definitions of Disaster, Hazard, Vulnerability, Risk, Capacity, Natural and Man-made disasters, Types of disasters. Introduction to natural hazards, causes and consequences of geological hazards, flood, drought and climate change issues, forest hazard, tsunami and coastal hazards, cyclone hazards, snow avalanche, Glacial Lake Outburst Flood and glacier related hazards, extreme weather events, urban and industrial hazards. Impact and mitigation in Global and Indian context.	15 hours
	Module 2 Disaster Management Cycle, Pre-Disaster – Risk Assessment and Analysis, Risk Mapping, zonation and Microzonation, Prevention and Mitigation of Disasters, Early Warning System; Preparedness, Capacity Development; Awareness During Disaster – Evacuation, Disaster Communication, Search and Rescue, Emergency Operation Centre, Incident Command System, Relief and Rehabilitation. Post-disaster – Damage and Needs Assessment, Restoration of Critical Infrastructure, Early Recovery, Reconstruction and Redevelopment. Geo-informatics in Disaster Management (RS, GIS, GPS); Disaster Communication System (Early Warning and Its Dissemination); Land Use Planning and Development Regulations; Disaster Safe Designs and Constructions	15 hours
	Module 3 International organisations: Red Cross, Sphere, Oxfam, World Relief, CBM International, UNDRO, UNDDR. Yokohama Strategy, Hyogo Framework of Action, UNISDR. Community Based Disaster Risk Reduction (CBDRR) Disaster Profile of India – Mega Disasters of India and Lessons Learnt Disaster Management Act 2005. NDMA, NIDM.	15 hours

Pedagogy	Lectures/ tutorials/ assignments/ self-study
References/ Readings	<ol style="list-style-type: none"> 1. Alexander, D., (1999), <i>Natural Disasters</i>, Kluwer Academic London, 632 pages 2. Coppola D P, (2007). <i>Introduction to International Disaster Management</i>, Elsevier Science (B/H), London. 3. Disaster Management Act 2005, Published by Govt. of India 4. Disaster Management Guidelines, GOI-UN Disaster Risk Program (2009–2020) 5. Hyndman, D., and Hyndman, D. (2016). <i>Natural hazards and disasters</i>. Cengage Learning. 6. Keller, E. A., and DeVecchio, D. E. (2016). <i>Natural hazards: earth's processes as hazards, disasters, and catastrophes</i>. Routledge. 7. Lopez-Carresi, A., Fordham, M., Wisner, B., Kelman, I., and Gaillard, J. (2014). <i>Disaster Management: International Lessons in Risk Reduction, Response and Recovery</i>. Routledge, 352 Pages. 8. Modh S. (2010) <i>Managing Natural Disasters</i>, Mac Millan publishers India LTD 9. Publications of National Disaster Management Authority (NDMA) on Various Templates and Guidelines for Disaster Management 10. Srivastava, H.N., and Gupta, G.D., (2006). <i>Management of Natural Disasters in developing countries</i>, Daya Publishers, Delhi, 201 p. 11. UNISDR. (2002). <i>Natural Disasters and Sustainable Development: Understanding the links between Development, Environment and Natural Disasters</i>, Background Paper No. 5
Course outcomes	<ol style="list-style-type: none"> 1. Students will acquire a comprehensive understanding of natural disasters. 2. Students will understand the Disaster Management Cycle and evaluate technologies for disaster mitigation. 3. Students will understand the role of international treaties and disaster relief organisations in disaster management. 4. Students will be able to analyze and evaluate the relationship of disasters with development.