

B.E. Semester: VII
Department of Civil Engineering

Subject Name: Disaster Management (CV703-N-C)

Course Category: Program Course Elective – II (PCE)

A. Objectives of the Course:

- To provide students an exposure to disasters, their significance and types.
- To ensure that students begin to understand the relationship between vulnerability, disasters, disaster prevention and risk reduction.
- To gain a preliminary understanding of approaches of Disaster Risk Reduction (DRR).
- To enhance awareness of institutional processes in the country.
- To develop rudimentary ability to respond to their surroundings with potential disaster response in areas where they live, with due sensitivity.

B. Teaching & Evaluation Scheme:

Teaching Scheme				Credit	Evaluation Scheme					Total Marks
L	T	P	Total		Theory		IE	CIA	Pra/Viva	
hrs	hrs	hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	
3	0	0	3	3	3	70	30	20	00	120

C. Detailed Syllabus:

1. Introduction to Disasters:

Definition: Disaster, Hazard, Vulnerability, Types of disasters: Earthquake, Landslide, Flood, Drought, Fire etc., Classification, Causes, Impacts including social, economic, political, environmental, health, psychosocial, etc., Role of Engineers in Disaster Management.

2. Types, Causes, Consequences and Control of Disasters:

Interrelationship between disaster and development, Geological Disasters, Hydro-Meteorological Disasters, Biological Disasters (epidemics, pest attacks, forest fire),

Technological Disasters (chemical, industrial, radiological, nuclear) and Manmade Disasters (building collapse, rural and urban fire, road and rail accidents, nuclear, radiological, chemicals and biological disasters), Global Disaster Trends – Emerging Risks of Disasters – Climate Change and Urban Disasters

3. Risk and Vulnerability Analysis:

Disaster Management Cycle, Pre-Disaster Risk Assessment and Analysis, Risk Mapping, 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

4. Applications of Science and Technology for Disaster Management & Mitigation:

Geo-informatics in Disaster Management (RS, GIS, GPS and RS) Disaster Communication System (Early Warning and Its Dissemination), Land Use Planning and Development Regulations, Disaster Safe Designs and Constructions Structural and Non Structural Mitigation of Disasters, S&T Institutions for Disaster Management in India

5. Disaster Management in India:

Evolution of Disaster Management in India, To understand the institutional and legal framework for India, Policy and Programmers for Disaster In India, Roles and Responsibilities of Panchayat, urban and Local bodies in Disaster Management, Indian Case Studies

D. Lesson Planning:

Unit No	Title of the Unit	Minimum Hours	Weightage (%)
1	Introduction to Disasters	6	20
2	Types, Causes, Consequences and Control of Disasters	10	25
3	Risk and Vulnerability Analysis	12	30
4	Applications of Science and Technology for Disaster Management & Mitigation	10	15

5	Disaster Management in India	7	10
	Total	45	100

E. Assignments:

- Introduction to Disasters
- Types, Causes, Consequences and Control of Disasters
- Risk and Vulnerability Analysis
- Applications of Science and Technology for Disaster Management & Mitigation
- Disaster Management in India

F. Instructional method and pedagogy (Continuous Internal Assessment Scheme CIA):

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
- Lecture may be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lectures, practical and Tutorial which carries 05 Marks.
- At regular intervals assignments is given. In all, a student should submit all assignments of 05 marks each.
- Classroom participation and involvement in solving the problems in Tutorial rooms carries 05 Marks.
- One internal exam of 30 marks is conducted as a part of Mid Semester evaluation.

G. Students Learning Outcomes:

On the successful completion of this course

- The students will be able to differentiate the types of disasters, causes and their impact on environment and society.
- Assess vulnerability and various methods of risk reduction measures as well as mitigation.
- Disaster damage assessment and management.
- Understand role of IT, remote sensing, GIS and GPS in risk reduction.

H. Recommended Study Materials:

a. Text book & Reference Books:

1. R. B. Singh ; Natural Hazards and Disaster Management; Rawat Publication
2. Singhal J.P. “Disaster Management”, Laxmi Publications, 2010.
3. Tushar Bhattacharya, “Disaster Science and Management”, McGraw Hill India Education Pvt. Ltd.
4. Gupta Anil K, Sreeja S. Nair. Environmental Knowledge for Disaster Risk Management, NIDM, New Delhi, 2011
5. Kapur Anu Vulnerable India: A Geographical Study of Disasters, IAS and Sage Publishers, New Delhi, 2010.
6. Coppola P Damon, 2007. Introduction to International Disaster Management, Carter, Nick 1991.

b. Web Materials:

1. www.GIS.Development.net
2. www.iirs.nrsa.org
3. <http://quake.usgs.gov>
4. www.nidmindia.nic.in

c. Indian Codes of Practice:

1. Government of India, National Disaster Management Policy, 2019

