| Program : | **Diploma in Civil Engineering** | |
|---|---|---|
| Course Code : **6012C** | | Course Title: **Disaster Management (CE)** |
| Semester : **6** | | Credits: **4** |
| Course Category: **Program Elective** | | |
| Periods per week: **4 (L:3, T:1, P:0)** | | Periods per semester:**60** |

**CourseObjectives:**

- To learn about various types of natural and man-made disasters.
- To impart the knowledge of pre- and post-disaster management for some of the disasters.
- To demonstrate various information and organizations in disaster management in India.
- To get exposed to technological tools and their role in disaster management.

**Course Prerequisites: Nil**

**Course Outcomes:**

On completion of the course, the student will be able to:

| COn | Description | Duration (Hours) | Cognitive Level |
|---|---|---|---|
| CO1 | Outline the basic information and precautions regarding various disasters | 15 | Understanding |
| CO2 | Decide first action to be taken under various disasters | 15 | Understanding |
| CO3 | Identify the organizations in India which are dealing with disasters | 14 | Understanding |
| CO4 | Select IT tools to help in disaster management | 14 | Understanding |
| | Series test | 2 | |

**CO – PO Mapping:**

| Course Outcomes | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | | | | | 3 | | |
| **CO2** | | | | | 3 | | |
| **CO3** | | | | | 3 | | |
| **CO4** | | | | | 3 | | |

3-Strongly mapped, 2-Moderately mapped, 1-Weakly mapped

**Course Outline:**

| Module Outcomes | Description | Duration (Hours) | Cognitive Level |
|---|---|---|---|
| **CO1** | **Outline the basic information and precautions  regarding various disasters** | | |
| M1.01 | Summarize the features of disaster and hazard | 3 | Understanding |
| M1.02 | Identify the terms such as vulnerability, risk and capacity | 3 | Remembering |
| M1.03 | Summarize the features of various disasters | 4 | Understanding |
| M1.04 | Differentiate natural and manmade disasters | 3 | Understanding |
| M1.05 | Explain emerging risks of disasters | 2 | Understanding |

**Contents:**

Understanding the Concepts and definitions of Disaster, Hazard, Vulnerability, Risk, Capacity

Disaster and Development - disaster management. Types, Trends, Causes, Consequences and Control of Disasters

Geological Disasters (earthquakes, landslides, tsunami, vibration and collapse due to mining); Hydro-Meteorological Disasters (floods, cyclones, lightning, thunder - storms, hail storms, avalanches, droughts, cold, sea attack- tempest and heat waves)

Biological Disasters (epidemics, pest attacks, forest fire);

Technological Disasters (chemical, industrial, radiological, nuclear) and Manmade Disasters

(building and other structural collapse, rural and urban fire, road ,rail and Airplaneaccidents, nuclear, radiological, chemical and biological disasters, water pollution , Food poisoning)

Global Disaster Trends - Emerging Risks of Disasters - Climate Change and Urban Disasters

| CO2 | **Decide first action to be taken under various disasters** | | |
|---|---|---|---|
| M2.01 | Identify various stages of disaster management cycle | 5 | Understanding |
| M2.02 | Summarise the steps to tackle disaster in various phases | 5 | Understanding |
| M2.03 | Identify the various organizations and their actions during disaster | 5 | Understanding |
| | Series Test – I | 1 | |

**Contents:**

Disaster Management Cycle and Framework

Disaster Management Cycle - Paradigm Shift in Disaster Management.

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; IDNDR, Yokohama Strategy, Hyogo Framework of Action

| CO3 | **Identify the organizations in India which are dealing with disasters** | | |
|---|---|---|---|
| M3.01 | Identify the disaster profile of India | 5 | Understanding |
| M3.02 | Summarise the features of disaster management act and policies | 5 | Understanding |
| M3.03 | Explain national policy on disaster management | 4 | Understanding |

**Contents:**

Disaster Management in India

Disaster Profile of India - MajorDisastershappenedinof India - Bhuj, Lathur earthquakes, Kerala flood (2018), flood in Kedarnath, Tsunami ,Plague in Gujarathand Lessons Learnt.

Disaster Management Act 2005 - Institutional and Financial Mechanism,

National Policy on Disaster Management, National Guidelines and Plans on Disaster Management; Role of Government (local, state and national),Non-Government and Inter Governmental Agencies-Role of public and youth

| CO4 | **Select IT tools to help in disaster management** | | |
|---|---|---|---|
| M4.01 | Familiarize various IT tools used in disaster management | 4 | Understanding |

| M4.02 | Identify the components of disaster communication system | 2 | Understanding |
|---|---|---|---|
| M4.03 | Identify the structural and non structural mitigation measures | 5 | Understanding |
| M4.04 | Identify the role of Science &TechnologyInstitutions in India for Disaster Management | 3 | Remembering |
| | Series Test – II | 1 | |

**Contents:**

Applications of Science and Technology for Disaster Management

Geo-informatics in Disaster Management (Remote Sensing, GIS, GPS).

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.

Role of Science &Technology Institutions for Disaster Management-NIDM, ILDM, AIDMI.

**Text / Reference:**

| T/R | Book Title/Author |
|-----|-------------------|
| T1 | Ghosh, G. K., Disaster Management, A P H Publishing Corporation |
| T2 | Murthy, D. B. N., Disaster Management: Text & Case Studies, Deep & Deep Pvt. Ltd. |
| R1 | Publications of National Disaster Management Authority (NDMA) on Various Templates and Guidelines for Disaster Management |
| R2 | Bhandani, R. K., An overview on natural & man-made disasters and their reduction, CSIR, New Delhi |
| R3 | Srivastava, H. N., and Gupta G. D., Management of Natural Disasters in developing countries, Daya Publishers, Delhi |
| R4 | Alexander, David, Natural Disasters, Kluwer Academic London |

**Online Resources:**

| Sl.No | Website Link |
|-------|--------------|
| 1 | https://ndma.gov.in/ |
| 2 | https://www.undp.org/content/dam/india/docs/disaster_management_in_india.pdf |
| 3 | https://www.ldeo.columbia.edu/chrr///research/profiles/pdfs/india_profile.pdf |
| 4 | https://nidm.gov.in/easindia2014/err/pdf/country_profile/India.pdf |