

SYLLABUS OF SKILL ENHANCEMENT COURSE, UNIVERSITY OF GOUR BANGA

SEMESTER-II

COURSE CODE: SEC-2 (DISASTER RISK REDUCTION)

COURSE TITLE: DISASTER RISK REDUCTION AND MANAGEMENT: SKILLS FOR SAFETY AND RESILIENCE

Credits: 3 (2 Credit lecture & 1 Credit practical)

Total Marks: 50

Duration of Semester-End Examination-1 hour

Lecture: 30 hours (1 credit =15 hour)

Practical: 30 hours (1 credit =30 hour)

Course Objective:

To equip students with the knowledge, skills and competencies to identify, assess, mitigate disasters and design effective disaster management plans and strategies at individual, institutional and community levels, aligning with national and global frameworks.

Course Outlines

Unit: 1	Understanding Disaster Risk Reduction and Management
• Basic concepts and terminology: Hazard, Vulnerability, Capacity, Exposure, Disaster, Risk, Disaster Management & Disaster Risk Reduction. • Hazard profile of India: Regional profile (River bank erosion, flood and landslide). • Disaster Management Cycle: Mitigation, preparedness, response, relief, recovery, rehabilitation. • Policy and legal frameworks: DM Act 2005, DM Amendment Act 2025, National Policy, State-specific Acts; PM 10 Points agenda. • International frameworks: Sendai Framework, Paris Agreement, SDGs. • Role of Institutions in DRR (overview only): NDMA, NIDM, IMD, CWC, GSI, BIS, ISRO, INCOIS, SDMA, DDMA, NDRF. • Case studies of different disasters in India: Lessons learned (minimum 2).	
Unit: 2	Preparedness, Mitigation and Response Planning
• Framework for Developing Disaster Management Plans. • Hazard, Vulnerability, Capacity and Risk (HVCR) Assessment tools and techniques: Transect walk, Hazard mapping, Problem tree, Chapatti diagram etc. • Mitigation and Preparedness: Evacuation planning, mock drills, tabletop exercises; disaster specific mitigation, Crowd Management techniques. • Basics of Incident Response System (IRS). • Role of emergency forces: NDRF, SDRF, police, fire services, armed forces, NCC, NSS. • Planning for more vulnerable groups. • Emerging technologies: Drones, digital literacy, mobile apps (GIRI tool, SAFAR, Meghdoot, UMANG, Sachet, CWC Flood Alerts, IMD, BIS, IHIP), social media for DRR.	

- Basics of safe construction and structural & non-structural audit exercise (safety of home/college buildings).
- Funding mechanisms for disasters in India.
- Emergency Communication Network.

Unit: 3 | Life-Saving Skills

- **First Aid in disasters:** Golden hour concept, CPR, wounds, choking, burns, fractures, animal bites (snake/dog/rabid), heat-related illnesses, triaging, stampede.
- **Household and personal preparedness and protection:** 72-hour emergency kit, safe food storage, water purification, ORS use, water sanitation and hygiene (WASH) and Infection Prevention Control (IPC) practices, Basic Sign Language.
- **Search and Rescue methods.**
- **Fire safety and electrical/gas/LPG safety:** Causes, prevention, fire extinguisher demonstration, indigenous methods (Natural first-aid remedies- aloe vera, turmeric, coconut oil, salt solution); traditional risk-reduction practices.
- **Disaster-specific response:** Floods, landslides, earthquakes, CBRN emergencies, pandemics, drowning, lightning, gas leakage, cyclone, heatwave, coldwave.
- **Psychosocial support in DRR;** Steps for implementing psychological first aid and its importance.
- **Public health preparedness:** Public health impacts of various disasters, Prevention of post-disaster water-borne and vector-borne diseases.

Unit: 4 | Field Exposure and Community Engagement

- **Field visits:** District Emergency Operations Centre, State Disaster Response Force/ National Disaster Response Force units, fire stations, State Emergency Operations Center, hazard prone communities, heat-prone areas (flood-prone village, fire-vulnerable urban slum).
- **Practical exposure:** Mock drills, demonstrations and simulations (multi-hazard, evacuation, earthquake, flood); interaction with responders and officials (Aapda Mitras, National Cadet Corps/National Service Scheme/Nehru Yuva Kendra Sangathan, Red Cross).
- **Community Engagement projects:** Street plays (nukkad natak), awareness campaigns, DRR clubs (institute and community level clubs), Information, Education and Communication material (podcasts, videos, comics, photo essays, posters, Knowledge exchange webinars).
- **Environmental hazards:** Youth/community participation (tree plantation, soil conservation).
- **Project/assignment:** Preparation of institutional/household DM plan in local language; budget-friendly multi-disaster survival kit prototype; reflective field report, youth-led community engagement projects and creation of IEC/digital communication materials.
- **Multidisciplinary integration:** Links with local governments, HEIs, youth/adolescent networks.
- **Activities for mitigating disaster risks:** Increasing green cover, plantation and knowledge of human anatomy.
- **Interaction with:** State, district, gram panchayat level officials, DRR helpline numbers, and knowledge of physical resources required and available locally; interview /session with disaster survivors.

Total Lecture hours (2 credits, 1 credit=15 hours)	30 hours
Total Practical hours (Field report /Project work/Community activity) (1 credit=30 hours)	30 hours
Total hours	60 Hours

Mode of Evaluation:

Continuous evaluation based on practical component: Field report /Project work/Community activity

Semester End Examination: Multiple Choice Question (MCQ) (Thirty (30) MCQs of one mark each shall be set, and all questions shall be compulsory)

Note: The approach of this course is to inculcate awareness of hazards and develop the capacity to respond to disasters with an aim for DRR. Hence, it is recommended to use the expertise of professionals during field visits and practical training. These professionals can be from the NDRF, SDRF, Indian Armed Forces, Firefighting department, medical and sports arenas and others who have first-hand experience and knowledge in such skills (a suggestive list is annexed).

Learning Outcome:

By the end of this course, students will be able to:

1. Identify hazards, vulnerabilities and risks at individual, institutional and community levels.
2. Outline the legal and institutional frameworks of DRR in India and globally.
3. Demonstrate life-saving skills, emergency communication, disaster response and risk mitigation techniques.
4. Utilize and implement basic tools and technologies for risk assessment, preparedness and resilience-building.
5. Prepare disaster management plans and design community awareness activities, or prototypes in regional/local contexts.

Books/Handbooks

1. Sphere Handbook for humanitarian response standards. Link: <https://spherestandards.org/handbook/>
2. Health emergency and disaster risk management framework (Health EDRM), WHO. Link: <https://www.who.int/publications/i/item/9789241516181>

Websites of Key Agencies

1. National Disaster Management Authority (NDMA): <https://ndma.gov.in> India's apex body for policy and planning in disaster management.
2. National Institute of Disaster Management (NIDM): <https://nidm.gov.in> Apex national level training and capacity-building institution for disaster risk reduction.
3. India Meteorological Department (IMD): <https://mausam.imd.gov.in> Provides official weather forecasts, warnings and alerts.
4. Central Water Commission (CWC): <http://www.cwc.gov.in> Responsible for flood forecasting and hydrological data.
5. Flood Forecasting Portal (FFWC): <https://ffs.india-water.gov.in/> Real-time flood forecasting and inundation alerts for India.
6. Geological Survey of India (GSI): <https://www.gsi.gov.in> Provides hazard maps and geological risk assessments.

7. India Disaster Resource Network (IDRN): <https://idrn.gov.in> Inventory of emergency response resources across India.
8. Coalition for Disaster Resilient Infrastructure (CDRI): <https://cdri.world/> Global initiative led by India for promoting resilient infrastructure.
9. Indian Space Research Organisation (ISRO): <https://www.isro.gov.in/> Space agency of India; information regarding academic programmes and fellowships
10. Indian Institute of Remote Sensing: <https://www.iirs.gov.in/> Research, educational programmes and resources related to remote sensing and geo-informatics
11. DRDO Avalanche Warning Bulletin: <https://drdo.gov.in/drdo/avalanche-warning-bulletin> Snow and avalanche forecasts for high-altitude regions.
12. Building Materials and Technology Promotion Council (BMTPC): <https://www.bmtpc.org/> Promoting sustainable, cost-effective, and disaster-resistant building materials and technologies
13. National Information Centre of Earthquake Engineering (NICEE) at IIT Kanpur: <https://www.nicee.org/EQTips.php> Learning Seismic Design and Construction

Mobile Applications

1. Bhooskhalan App (GSI) Reports and monitors landslide events in India.
2. MausamGram App (IMD) Hyperlocal weather forecast and alerts powered by IMD.
3. Sachet App (NDMA) Alerts for natural and human-induced disasters and industrial safety incidents.
4. SAFAR (System of Air Quality and Weather Forecasting and Research): <https://safar.tropmet.res.in/> Real-time air quality and environmental health forecasting.

NDMA Booklets

1. AAPDA MITRA: A prime example of community-based disaster management: <https://ndma.gov.in/sites/default/files/IEC/Booklets/AAPDA%20MITRA%20A5%20BOOK%20Final.pdf>
2. DISABILITY INCLUSIVE DRR: Transformative journey towards a disability-inclusive society: <https://ndma.gov.in/sites/default/files/IEC/Booklets/Disability%20inclusive%20DRR.pdf>
3. BEATING THE HEAT: How India successfully reduces mortality due to heat waves: <https://ndma.gov.in/sites/default/files/IEC/Booklets/HeatWave%20A5%20BOOK%20Final.pdf>
4. PSYCHOSOCIAL CARE: Mitigating impact of disasters on mental health: <https://ndma.gov.in/sites/default/files/IEC/Booklets/Psychosocial%20A5%20Book.pdf>
5. REACHING OUT TO SAVE LIVES: How social media transformed India's readiness towards disasters: <https://ndma.gov.in/sites/default/files/IEC/Booklets/Social%20Media%20A5%20BOOK.pdf>
6. THUNDERSTORM AND LIGHTNING: Tackling weather hazards: <https://ndma.gov.in/sites/default/files/IEC/Booklets/Thunderstorm%20Lightning%20NDMA%20A5%20BOOK%20New.pdf>

NIDM Training Modules and Guidelines

1. Do's and Don'ts for Common Disasters: https://nidm.gov.in/PDF/IEC/DOS_E_24.pdf Simple safety instructions for major disasters.

2. Community-based disaster risk management:
https://nidm.gov.in/PDF/Modules/ToTModule_CBDRM2025.pdf
3. Management of crowds at large congregations:
https://nidm.gov.in/PDF/Modules/TrgMod_CrowdatLargeCongregations.pdf
4. Climate change and extreme events risk reduction:
https://nidm.gov.in/PDF/Modules/TM_CCEERR_23.pdf
5. Health adaptation and resilience to climate risks;
https://nidm.gov.in/PDF/Modules/NIDM_HARCR2021.pdf
6. NIDM IEC Material: <https://nidm.gov.in/iec.asp> Informational and awareness-raising content on DRR.
7. Social and Behavioural Change Communication (SBCC) Training Module:
https://nidm.gov.in/sbc_training_module.asp Training content for behaviour change during disasters.
8. SBC Toolkit – Cyclone: https://nidm.gov.in/sbc_cyclone.asp Preparedness and response strategies for cyclone-prone areas.
9. SBC Toolkit – Flood: https://nidm.gov.in/sbc_floods.asp Community-level flood preparedness material.
10. SBC Toolkit – Earthquake: https://nidm.gov.in/sbc_eq.asp Guidelines for earthquake risk reduction.
11. NIDRR Checklist and Planning Tools:
<https://nidm.gov.in/pdf/sbc/DRR%20Checklist%20PDF%20for%20WEB.pdf> Tools for local disaster preparedness planning.
12. NIDRR Communication Materials User Guide:
<https://nidm.gov.in/pdf/sbc/NIDM%20User%20Guide%20Communication%20Material%20PDF%20for%20WEB.pdf> Reference for community-level communication campaigns.
13. NIDM Training Modules: <https://nidm.gov.in/modules.asp> Topic-wise training modules for educators and practitioners.

Other Key Materials

1. NDMA Awareness Booklets: <https://ndma.gov.in/Resources/booklets> Official illustrated booklets on various disaster types.
2. Indian Red Cross Society: <https://indianredcross.org> Offers first aid, blood services, and disaster relief training.
3. International Federation of Red Cross and Red Crescent Societies: <https://www.ifrc.org>
4. NIDM Audio-Visual Material (YouTube): <https://www.youtube.com/@NIDMINDIA> Videos, webinars, and documentaries on DRR.
5. UNDRR resources: <https://www.undrr.org/> Resources for global frameworks
6. Class 9–10 CBSE Teachers' Manual (Life Skills)

Resources on Youth Engagement for Disaster Risk Reduction

1. The Power of Youth Engagement in Disaster Risk Reduction activities (Technical Report · May 2020): <https://www.researchgate.net/publication/351049159>

2. Participation in Disaster Risk Reduction (DRR) Education: Analysing the Practices, Issues and Challenges - Open Journal of Earthquake Research, 2023, 12, 198-222: <https://www.scirp.org/journal/ojer>

3. Youth Participation in Disaster Risk Management and Climate Change Adaptation (Book · October 2023: <https://www.researchgate.net/publication/382973623>

4. Nalla, V., & Ranjit, N. (Eds.). (2022). Afterwards: Graphic narratives of disaster risk and recovery from India. Indian Institute for Human Settlements. <https://doi.org/10.24943/9788195648559>

Online courses

• NIDM

1. Comprehensive Disaster Risk Management Framework (CDRMF):

https://elearning.nidm.gov.in/enrol/blpayment/course_overview.php?id=193

2. Gender Aspects of Disaster Recovery and Reconstruction:

https://elearning.nidm.gov.in/enrol/blpayment/course_overview.php?id=187

3. Risk Sensitive Land Use Planning:

https://elearning.nidm.gov.in/enrol/blpayment/course_overview.php?id=191

4. Safe cities: https://elearning.nidm.gov.in/enrol/blpayment/course_overview.php?id=197

5. Community- Based Disaster Risk Management:

https://elearning.nidm.gov.in/enrol/blpayment/course_overview.php?id=217

6. Climate Change and Disaster Risk:

https://elearning.nidm.gov.in/enrol/blpayment/course_overview.php?id=216

• SWAYAM and NPTEL MOOCs:

1. Disaster Recovery and Build Back Better (BBB):

https://onlinecourses.nptel.ac.in/noc22_ar05/preview

2. Climate Change and Disaster Risk Management

https://onlinecourses.swayam2.ac.in/ntr25_ed113/preview

3. Disaster Management: https://onlinecourses.swayam2.ac.in/ntr25_ed102/preview

4. Disaster Management: https://onlinecourses.swayam2.ac.in/cec25_hs135/preview

5. Disaster Risk Reduction and Management:

https://onlinecourses.swayam2.ac.in/ini25_hs32/preview