Department of Geography & Disaster Management

(DST-FIST Sponsored and UGC-SAP Assisted Department)

University of Kashmir, Srinagar-6, J&K

NAAC Accredited Grade "A+"

COURSE STRUCTURE

FOR

M. A. / M. Sc. Disaster Management

Under
CHOICE BASED CREDIT SYSTEM (CBCS)
Scheme

Department of Geography and Disaster Management

(DST-FIST Sponsored and UGC-SAP Assisted Department)

University of Kashmir-190006

(2020 Onwards)

M.A./M.SC. DISASTER MANAGEMENT

Program Outcome: The incidence of natural and human induced disasters has assumed alarming dimensions both overtemporal and spatial scales, resulting in widespread loss of life and assets globally. Collaborative efforts involving all stakeholders are required at various levels for making Disaster Risk Reduction (DRR) mechanism effective. The Postgraduate programme in Disaster Management,(M.A./ M. Sc.) being offered by the University of Kashmir is an academic initiative expected to provide significant contribution towards addressing the various dimensions of Disaster RiskReduction in this fragile mountainous environment. The students of this programme are given a comprehensive exposure to the various facets of disaster management ranging from prevention, mitigation, preparedness to disaster response. The programme aims to prepare a pool of skilled human resource personnel who will become qualified and professional disaster managers of future. The graduates of the programme are expected to be equipped with a sound knowledge of theory and practical domains of the subject with professional execution capabilities. In addition the course offers substantial career opportunities in various regional, national, and international organizations.

Course Description

M.A. /M.Sc. Disaster Management is a two year course comprising of four semesters. The students are offered 41 papers that include (16) Core Papers along with (17) Discipline Centric Elective Theory Papers, (4) Generic Elective Papers and (4) Open Elective Papers. Core Papers are generally comprised of 4 credits. Discipline Centric Electives comprise of 4 credits and 2 credits respectively. Generic Elective and Open Elective Papers are comprised of 2 credits each.

The M.A. /M.Sc. Programme in Disaster Management is based on 112 credits with six different components viz., (I) Teaching (II) Tutorial (III) Practical, (IV) Seminar, (V) Field Studies and (VI) Project Work (Dissertation)in fourth semester.

A candidate compulsorily has to obtain 24 credits per semester i.e. 48 credits in one year programme (2 semesters) and a total of 96 credits in two year programme (4 semesters).

Out of the 24 credits in a semester; 14 credits compulsorily are to be opted from "Core Courses", while the remaining 10 credits can be obtained in either of the following two ways:

8credits are to be obtained from Discipline Centric Courses. At least 2 credits are to be obtained from a pool of "Generic Electives/ Open Electives "offered by the concerned schooland other Departments of the University

A candidate has a provision to go with a slow pace of as low as 20 credits per semester or with an accelerated pace of as high as 28 credits per semester, so as to earn minimum required 96 credits in 2year programme (4semesters).

Note: There shall be two faculty members in-charge of the Field Training Course (DM20304CR) in the 3rd semester to be conducted within or outside the J&K. In the Field Training Course, each student shall have to prepare a report as per nature and purpose of the field.

All the faculty members shall provide supervision /guidance to the students for the preparation of the field study report (DM20304CR). A faculty member shall have to supervise a maximum of three students for preparation of the field report of DM20304CR.

Semester-I

Course Structure: M.A./ M.Sc. Disaster Management

Course Code	*Course Title*	*Category*	*Hours during a week*			*Credits*
			Lecture	*Tutorial*	*Practical*	
DM20101CR	**Understanding Hazards and Disasters**	**Core**	**4**	**2**	**0**	**4**
DM20102CR	**Fundamentals of Disaster Management**	**Core**	**2**	**1**	**0**	**2**
DM20103CR	**Remote Sensing, GIS and GPS-I**	**Core**	**4**	**2**	**0**	**4**
DM20104CR	**Remote Sensing, GIS and GPS-II (Practical)**	**Core**	**0**	**0**	**8**	**4**
DM20105DCE	**Understanding Geophysical Environment**	**Discipline Centric Elective**	**4**	**2**	**0**	**4**
DM20106DCE	**National and Regional Hazard Profile**	**Discipline Centric Elective**	**2**	**1**	**0**	**2**
DM20107DCE	**Disaster Prevention and Early Warning Systems**	**Discipline Centric Elective**	**2**	**1**	**0**	**2**
DM20108DCE	**Global Disaster Scenario**	**Discipline Centric Elective**	**2**	**1**	**0**	**2**
DM20001GE	**Earthquake Safety and Response**	**Generic Elective**	**2**	**1**	**0**	**2**
DM20001OE	**Introduction to Natural Hazards**	**Open Elective**	**2**	**1**	**0**	**2**
Total Contact Hours:		**Total Credits: 28**				

Understanding Hazards and Disasters DM20101CR

Course Outcome: This course has been designed to discuss the concept, nature, origin and types of disasters in the backdrop of prevailing natural and anthropogenic disaster scenario across the world. The learners, apart from the historical background of disasters, will also understand the complexity of the disasters that originate due to Natural Processes, Human Interference with Nature or a combined effect of both natural process and human Activities. The course is expected to make the learners aware about the genesis of disasters arising out of Geological, Geophysical, Hydro-meteorological, Environmental and other Anthropogenic Processes

Credit I

1. Hazards: Conceptand Definition
2. Disasters: Concept and Fundamentals
3. Classification of Hazards and their Strengths and Weaknesses
4. Hazards-Characteristic Features
5. Impacts of Hazards

Credit II

1. Earthquakes
2. Tsunami
3. Volcanic Eruptions
4. Landslides
5. Land Subsidence

Credit III

1. Floods l
2. Drought
3. Cyclones
4. Snow avalanches
5. Heat and Cold Waves

Credit –IV

1. Fires: Wild and Urban
2. Chemical and Biological Hazards
3. Radiological and Nuclear Hazards
4. Accidents: Air, Road and Rail
5. Epidemics and Conflicts

Suggested Readings

- An Introduction to Disaster management; S. Vaidyanathan.
- Text Book of Disaster Management; Bandla Srinivas. ATPA
- Resource Book on Chemical (Industrial) Disaster Management; Anil K. Gupta, 2016.
- Encyclopaedia of Disaster and Hazards Management. Oxford Book Company
- Environmental Disasters; KK Singh, *et. Al.* APH Publishers
- Forest Fire Disaster Management. NIDM
- Forest Fire Disaster Management; Satendra, 2014. A. D. Kaushik
- Geological Hazards and Hydro-meteorological Hazards www.nidm.gov.in
- Man-made Disasters; Barry A. Tuner, Nick Pidgeon.
- Resource Book on Chemical (Industrial) Disaster Management; Anil K Gupta, 2016.
- Earthquake & Natural Disasters; Manik Kar. Motilal Banarsidass Publishers Private Limited
- Encyclopedia of Disaster Management; PC Sinha. Anmol Publishing House

FUNDAMENTALS OF DISASTER MANAGEMENT DM20102CR

Course Outcome: The course has been designed to promote the understanding of the basic concepts, principles, and significance of disaster management and its evolution with time. The learners are expected to understand the different phases of disaster management cycle right from Rescue, Relief, and Rehabilitation to Mitigation and Preparedness Phases. The learners will also understand the Policies and Principles of disaster management adopted at Local, National and International Levels to mitigate the impacts of disasters for the sustainable development. The course also highlights the Disaster Management Policy of India and its organization at Centre, State and District Levels with reference to Jammu and Kashmir.

Credit-I

1. Disaster Management- Concept
2. Disaster Management- Components and Scope
3. Disaster Management Cycle
4. Paradigm Shift in Disaster Management
5. Disasters and Developmental Interface

.Credit-II

1. Disaster Management Policy: Principles and Significance
2. Disaster Management Policy of India
3. Disaster Management Policy of J&K
4. Institutional Mechanism for Disaster Management for India and J&K
5. UN Organizations for Disaster Management

Suggested Readings

- Disaster Management; G. K. Gosh. A.P.H. Publishers.
- Encyclopedia of Disaster and Hazards Management; Rajesh K. Yadav *et. al*. Oxford Book Company
- A Manual on Disaster Management; Parag Diwan, 2010. Pentagon Earth.
- Disaster Science and Management; Tushar Bhattacharya, Mc. Graw Hill
- Introduction to International Disaster Management; Damon Coppola. 3rd Edition, 2015.
- Disaster Theory: An Interdisciplinary Approach to Concepts and Causes; David Etkin, 2014.
- Disaster Risk Management Systems Analysis: A Guide Book. Stephan Baas, 2008. Food and Agriculture Organization of the United Nations.
- Handbook of Hazards and Disaster Risk Reduction; Ben Wisner, J.C. Gaillard, Ilan Kelman, 2012. Routledge.
- Systems Approach to Management of Disasters: Methods and Applications, Slobodan P. Simonovic, 2011. Wiley.
- http://www.unisdr.org/;
- http://www.ndma.gov.in/en/:
- http://nidm.gov.in/default.asp:
- Https://www.fema.gov/:

REMOTE SENSING, GIS AND GPS-I DM20103CR

Course Outcome: The course aims to develop and enhance student's theoretical understanding of Remote Sensing, Geographic Information System (GIS) and Global Positioning System (GPS). The students would gain understanding of electromagnetic spectrum, Image Interpretation, and image processing. In addition to that this course would include study of the GIS components, data models, GPS segments and applications. The course is expected to train the students for onscreen visualization, interpretation and management of the earth's surface features and processes from regional and global dimensions to handle the complexity of the disasters in the field of disaster management.

Credit-I

1. Fundamentals of Remote Sensing
2. Electromagnetic Spectrum (EMS)
3. Energy Interactions with Atmosphere and Earth Surface Features
4. Image Interpretation
5. Introduction to Digital Image Processing

Credit-II

1. Remote Sensing Systems
2. Earth Observation Space Programmes
3. Platforms – Types and Functions
4. Sensors-Active/ Passive. Multispectral and Hyperspectral Systems
5. RADAR and LIDAR Systems

Credit-III

1. Introduction to Geographic Information System
2. Components of GIS
3. Spatial and Non-spatial Data
4. Data Models- Raster and Vector, Processing and Analysis
5. Data dissemination

Credit-IV

1. Introduction to Global Positioning system (GPS)
2. GPS Segments
3. Fundamentals of GPS Positioning
4. Sources of Errors and Limitations
5. Applications of GPS

Suggested Readings

- Environmental Modelling with GIS and Remote Sensing, Andrew Skidmore, 2003
- Remote Sensing, Principles and interpretation, Floyd F. Sabins Jr., 1987. W.H. Freemanes & Co., New York, 2nd Edition.
- Integration of GIS and Remote Sensing, Victor Mesev, 2008.
- Introduction to Remote Sensing, James B. Campbell, Randolph H. Wynne; Fifth Edition.
- A Guide to Effective Map Design, N. Peterson, 2009, GIS Cartography. Gretchen, New York.
- Remote Sensing and Global Environmental Change; Sam J. Purkis and Victor V. Klemas, 2011,
- GIS Solutions in Natural Resource Management; Stan Marany, 1999. Onward Press, USA.

REMOTE SENSING, GIS AND GPS-II(Practical) DM20104CR

Course Outcome: This is a practical course aimed at imparting Geo-spatial techniques to the students. The students will be given basic understanding of the types and characteristics of spatial data. Learners would be exposed to various softwares (e.g., ERDASs Imagine; ArcGIS) to handle, edit, integrate, and analyze geographic data for decision making. The students are also expected to be able to extract information from satellite data, map designing, and use 3D data for various applications. Moreover, practical training would be given to students for collection, transfer, and processing of GPS data in different application which will greatly enhance their capability in monitoring and managing disasters.

Credit-I

1. Introduction to GIS Softwares
2. GIS Mapping- Vector Layer Creation (Point, Line, Polygon), Buffers
3. Import and Export of attribute data
4. Overlay Analysis (Multi-Criteria Analysis)
5. Map Designing

Credit-II

1. Introduction to Remote Sensing Software
2. Data- Formats and Exchange
3. Image Enhancement
4. Interpretation of Satellite Data
5. Classification-Supervised and Unsupervised, Accuracy Assessment

.

Credit-III

1. 3D data –ASTER, GDEM and SRTM
2. Interpolation of Data
3. Digital Elevation Model (DEM)-Methods
4. Terrain Analysis using DEM
5. Watershed Delineation, Drainage Morphometric Analysis

Credit-IV

1. Introduction to Global Positioning System (GPS) Survey
2. Handling and Operation of GPS
3. Data Collection
4. Post- Processing of GPS Data
5. Generation of Map Layers

Suggested Readings:

- Environmental Modelling with GIS and Remote Sensing; Andrew Skidmore, 2003.
- Remote Sensing, Principles and interpretation; Floyd F. Sabins Jr. 1987. W.H. Freemanes & Co;
- Integration of GIS and Remote Sensing; Victor Mesev, 2008.
- Introduction to Remote Sensing, Fifth Edition. James B. Campbell and Randolph H. Wynne.
- GIS Cartography: A Guide to Effective Map Design; N. Peterson, 2009. Gretchen New York, 2nd Edition.
- Remote Sensing and Global Environmental Change; Sam J. Purkis and Victor V. Klemas, 2011.
- Stan Marany, 1999, GIS Solutions in Natural Resource Management, Onward Press, USA.

UNDERSTANDING GEOPHYSICAL ENVIRONMENT DM20105DCE

Course Outcome: This course aims at providing an in-depth understanding of geo-physical Environment. It aims to focus on internal structure of earth, tectonics, landform evolution, Ocean bottom relief, and coastal geomorphology.It also deals with various aspects of earth's heat budget, climate and its controls and processes governing Cryosphere. The course is expected to impart the knowledge about the dynamics, role and impact of these geo-physical attributes on the disaster profiles across the globe.

Credit-I

1. Internal Structure of the Earth
2. Concept of Landform Evolution
3. Earth Movements
4. Classification of Landforms
5. Role of Geomorphology in Understanding Disaster Profile of a Region

Credit-II

1. Hydrosphere and Hydrological Cycle
2. Oceanic Bottom Relief and Coastal Geomorphology
3. Role of Oceans in Shaping the Ecology of Surrounding Land-Masses
4. Ocean Currents and their Importance
5. El Nino-Southern Oscillations and La-Nina Phenomena

Credit- III

1. Climate: Climatic Controls
2. Climatic Zones and their Characteristics
3. Global Pressure Belts and Winds
4. Insolation and Heat-Budget of the Earth
5. Extreme Weather Events

Credit- IV

1. Cryosphere- Glaciers and their types
2. Continental Glaciers: Nature and Characteristics
3. Alpine Glaciers: Global Distribution
4. Glaciers and Global Water Security
5. Climate Change and its Implications on Glaciers

Suggested Readings

- Processes and Landforms; Alam Clowes and Comfort.
- A systematic Analysis of Late Cenozoic Landforms; Bloom, A.L., Geomorphology.
- Hydrology: An Introduction; Wilfried Brutsaert, 2005.
- Unstable Earth; Steers, J.A.
- Elements of Physical Geography; Strahler, A.H. & Strahler, A.H.
- Principles of Geomorphology; Thornbury, W.D.

NATIONAL AND REGIONAL HAZARD PROFILE DM20106DCE

Course Outcome: The course is intended to familiarise the learners about the diverse disaster Profile of India including Jammu and Kashmir as a Multi-Hazard zone. The vulnerability of coastal states to cyclones and tsunamis; Himalayan states to earthquakes, floods, landslides and avalanches and the plain areas to drought and floods are the focus of studies apart from the epidemics and Traffic Accident disasters in India. The learners are expected to get acquainted with these hazards and disasters in the light of hazard exposure, risk and vulnerability of the specific areas and people across the country. Besides, the course aims to enhance the understanding of local disaster scenario with the help of case studies of recent disasters in Jammu and Kashmir.

Credit-I

1. Hazard Profile of India: An Overview
2. Earthquakes and Tsunami
3. Landslides and Snow Avalanches
4. Floods, Droughts and Cyclones
5. Epidemics and Accidents

Credit II

1. J&K: A Multi-Hazard Zone
2. Earthquake: Historical Perspective and Vulnerability
3. Floods: Zonation and Mitigation
4. Landslides and Snow Avalanches- Zonation and Mitigation
5. Recent Disasters in J&K

Suggested Readings

- Geography of Jammu and Kashmir; N. Raina, 1981.
- Disaster Management Policy of Jammu and Kashmir, Document -2012
- Geography of Jammu and Kashmir; Majid Husain, 1998,
- Systematic Geography of Jammu and Kashmir; Qazi, S.A. 2005.
- Disaster Management in India: Structure and Challenges; Purohit Jyoti, 2013. Lambert Publication.
- A Manual on Disaster Management. Parag Diwan, 2010. Pentagon Earth.
- Disaster Management. G. K. Gosh. A.P.H. Publishers.
- DISASTER MITIGATION: EXPERIENCES AND REFLECTIONS; Pardeep Dhameja, 2004. PHI Pub.
- Disaster Management in India; Rajendra Kumar Pandey, 2020. SAGE Publications India Pvt Ltd

DISASTER PREVENTION AND EARLY-WARNING SYSTEMS DM20107DCE

Course Outcome: In this course the students will come to know about the technology based Disaster Forecast, Prediction and Early Warning System as a means of capacity building with respect to various geological, hydro metrological disasters. The course also aims at familiarizing the learners with important national and international agencies for the Prediction, Forecasting and Early Warning Systems for coordinated efforts in disaster mitigation and resilience.

Credit - I

1. Disaster Prevention: Concept and Significance
2. Capacity Building
3. Mass Awareness
4. Technology Driven Initiatives in Disaster Prevention
5. Agencies involved in Disaster Prevention

Credit - II

1. Early Warning System (EWS): Need, Significance and Challenges
2. EWS for Earthquakes, Landslides and Avalanches
3. EWS for Floods and Droughts
4. EWS for Tsunami
5. National and International Agencies for Forecasting and Early Warning Systems

Suggested Readings

- Disaster Management and Preparedness; Collins Larry R. and Schneid Thomas D. 2000. Taylor and Francis.
- Managing Disaster Risk in Emerging Econom(eds.)
- Disaster Mitigation Experiences and Reflections; Sahni, Pardeep. *et.al.* 2002. Prentice Hall of India, New Delhi.
- Natural Hazards: Local, National, Global; White, G.F, 1974. Oxford University, Press, New York.
- Assessment of Research on Natural Hazards; White, Gilbert F. and J. Eugene Hass, 1975. Cambridge, MIT Press.
- Disaster Management and Risk Reduction; Vishwa Bahar Prasad Seti.
- A practical guide to Disaster Management; A. K. Jain. Motilal Banarsidass Publishers Private Limited.
- EIA & Disaster Management; Alok Satsangi. Rajat Publishers.

GLOBAL DISASTER SCENARIO DM20108DCE

Course Outcome: The course has been devised to familiarizing the learners with spatio-temporal dynamics of disasters across the globe on account varying geological, hydro-meteorological, characteristics. The differences in geographic locations, topography, climate and developmental status lead to highly variable and complex disasters scenario across the globe. The learners will understand why Asia-Pacific is the hub of major disasters followed by African countries, North and South America, European Union and USA in a decreasing order of intensity and will also be made familiar with DRR and mitigation strategies adopted across the globe.

Credit-I

Disaster Profile of:

1. Asia Pacific Region
2. Africa
3. North and South America
4. European Union
5. South Asia

Credit -II

1. Global Seismic Hazard Scenario
2. Global Flood Hazard Scenario
3. Global Cyclone Profile
4. Tsunami Hazard Scenario at Global level
5. Drought and Extreme Weather Events- A Global Perspective

Suggested Readings

- Disaster Management: A Disaster Manager's Handbook; Carter, W. Nick. Asian Development Bank, 2008.
- Disaster Management, Global Challenges; Krishnamurthy, *et.al.* University Press. 2009.
- Global Disaster Management; Arun Kumar: SBS publishers. UK edition. Feb.2008.
- Handbook of Disaster Risk Reduction & Management; Christian N Madu and Chu-Hua Kuei, 2017. World Scientific.
- Natural Calamities and Disaster Management; Rajesh Arora, Sonali Publications.
- Disaster Management Approaches and Strategies; Tej Singh. Akansha Publication House New Delhi.
- https://www.undrr.org/
- https://www.undrr.org/publication/unisdr-strategic-framework-2016-2021.
- https://www.undrr.org/publications (Annual report for the United Nations Office for Disaster Risk Reduction 2019)

EARTHQUAKE SAFETY AND RESPONSE DM20001GE

Course Outcome: The seismic disasters are the nature's deadliest and devastating disasters creating havoc in a matter of seconds to minutes. The course would make the learners aware about various safety gears and response measures including emergency response, relief and rescue operations as well as the role of CBO's and NGOs for preventive measures like education, awareness, preparedness & mock drills to mitigate the seismic impacts and enhance resilience.

Credit I

1. Earthquakes: Causes and Consequences
2. Earthquake Measuring Scales
3. Earthquake Prediction
4. Seismic Hazard- Global Scenario
5. Earthquake Vulnerability and Seismic Zonation of India with special reference to J&K

Credit II

1. Earthquake Mitigation Measures
2. National Building Codes
3. Earthquake Resistant Construction
4. Earthquake Preparedness, Emergency Response and Mock Drills
5. Earthquake Safety Measures at Home

Suggested Readings

- Earthquake & Natural Disasters; Manik Kar.
- Natural hazards & DM Vulnerability & Mitigation; Singh RB.
- Safety and Disaster Management Methods, Techniques, Recent Approach, Major Events & Exist Framework Hazardous Material; Dutta O. P.
- Geological HazardsTheir assessment avoidance and mitigation; Bell, F.G, Routledge, London,
- Earthquake Research and Analysis; Sebistiano D. Amico, 2014. Intech.
- Basic Search & Rescue Skills Emergency Response International; www.erionline.com.
- Earthquake Prediction; www.world-earthquakes.com
- Earthquake Safety; http://www.bmtpc.org/
- Earthquake Tips; http://www.nicee.org/
- Safety and Disaster Management Methods, Techniques, Recent Approach; O. P. Dutta.
- School Safety Initiatives, Geo Hazards Society; http://www.geohaz.in/

INTRODUCTION TO NATURAL HAZARDS DM20001OE

Course Outcome: This course covers all the major hazards and is aimed at making students familiar withfundamentals of natural hazards. The students are expected to gain comprehensive knowledge about the types, causes, mechanism of occurrence, and spatial variability of hazards.

Credit- I
1. Flood
2. Drought
3. Avalanche
4. Cyclone
5. Wild Fires

Credit- II
1. Earthquake
2. Tsunami
3. Volcanic Eruption
4. Landslide
5. Land Subsidence

Suggested Readings

- An Introduction to Disaster management; S. Vaidyanathan.
- Text Book of Disaster Management; Bandla Srinivas. ATPA
- Encyclopaedia of Disaster and Hazards Management; Rajesh K .Yadav., et al. Oxford Book Company
- Environmental Disasters KK Singh *et. al.* APH Publishers
- Forest Fire Disaster Management NIDM
- Forest Fire Disaster Management; Satendra, A. D. Kaushik, 2014
- Geological Hazards and Hydro-meteorological Hazards; www.nidm.gov.in
- Man-made Disasters; Barry A. Tuner, Nick Pidgeon.
- Encyclopedia of Disaster Management; P.C. Sinha. Anmol Publishing House.

Semester-II

Course Structure: M.A./ M.Sc. Disaster Management

Course Code	*Course Title*	*Category*	*Hours during a week*			*Credits*
			Lecture	*Tutorial*	*Practical*	
DM20201CR	**Vulnerability Assessment**	**Core**	**4**	**2**	**0**	**4**
DM20202CR	**Disaster Response**	**Core**	**2**	**1**	**0**	**2**
DM20203CR	**Disaster Rehabilitation, Reconstruction &Recovery**	**Core**	**4**	**2**	**0**	**4**
DM20204CR	**Geospatial Tools for Disaster Management**	**Core**	**0**	**0**	**8**	**4**
DM20205DCE	**Legal Frameworks in Disaster Management**	**Discipline Centric Elective**	**4**	**2**	**0**	**4**
DM20206DCE	**Community Based Disaster Management**	**Discipline Centric Elective**	**2**	**1**	**0**	**2**
DM20207DCE	**Waste and Debris Management**	**Discipline Centric Elective**	**2**	**1**	**0**	**2**
DM20208DCE	**Introduction to Seismic Risk Reduction**	**Discipline Centric Elective**	**2**	**1**	**0**	**2**
DM20002GE	**Flood Hazard Management**	**Generic Elective**	**2**	**1**	**0**	**2**
DM20002OE	**Introduction to Human Induced Hazards**	**Open Elective**	**2**	**1**	**0**	**2**
Total Contact Hours:		**Total Credits: 28**				

VULNERABILITY ASSESSMENT DM20201CR

Course Outcome: This course aims to promote understanding pertaining to various physical, social, economic, and environmental aspects of vulnerability. The learners are expected to be updated about the various criterions of vulnerability assessment, vulnerability analysis of India especially the Himalayan cities, shanty settlements and strategic planning for vulnerability reduction.

Credit-I

1. Vulnerability: Concept and Nature
2. Vulnerability: Types and Dimensions
3. Causes of Vulnerability
4. Vulnerability and Risk Relationship
5. Vulnerability Evaluation

Credit-II

1. Vulnerability Indicators and their Limitations
2. Vulnerability Assessment: Approaches
3. Vulnerability Assessments Methods
4. Vulnerability Assessment Models (PAR/SVM)
5. Vulnerability Mapping

Credit-III

1. Vulnerability Analysis with reference to India
2. Rural-Urban Vulnerability
3. Vulnerability of Himalayan Cities
4. Vulnerability of Shanty Settlements
5. Vulnerability of Weaker Sections

Credit-IV

1. Strategic Planning for Vulnerability Reduction
2. Policy Making for Vulnerability Reduction
3. Physical and Social Infrastructure for Vulnerability Reduction
4. Impediments in Vulnerability Reduction in India
5. Development for Survival and Vulnerability Reduction

Suggested Readings

- Measuring Vulnerability to Natural Hazards; Birkmann, 2007.
- Disaster Risk and Vulnerability; David Etkinand Chowdhury, Emdadul Haque, 2012.
- Mapping Vulnerability: Disasters, Development and People; Greg Bankoff and Georg Frerks, 2013.
- Natural Hazards and Disaster Management: Vulnerability and Mitigation; J.B. Singh. 2006.
- Disaster Vulnerability Management and Mitigation; Seemin Mushir. 2018.
- Understanding Disaster Risk, A Multidimensional Approach. Pedro Santos et.al. 2020. 1st Edition. Elsevier Publications.
- Communicating Emergency Preparedness, Strategies for creating a Disaster Resilient Public; Damon, P.Copploa, Errin, K. Maloney. CRC Press London.

DISASTER RESPONSE DM20202CR

Course Outcome: The course on "Disaster Response" deals with essential components of response, stake-holder's coordination in disaster response, Students should learn how the response to natural as well as man-made disasters has progressively improved in terms of effectiveness coordination between the stakeholders

Credit-I

1. Disaster Response and Emergency Response: Concept and Significance
2. Disaster Response Plan
3. Communication, Participation and Activation of Emergency Preparedness Plans
4. Logistic Management,
5. Needs and Damage Assessment

Credit-II

1. Relief Management-Essential Components
2. Minimum Standards of Relief
3. Disaster Relief Funding
4. Role of Central, State, District and Local Administration in Disaster Response
5. Role of NDRF, SDRF and Civil Defense in Disaster Response

Suggested Readings

- Disaster Response and Emergency Management; Alfred Scott, 2016. Syrawood Publishing House.
- Natural Disaster Management, New Technologies and Opportunities; Subhir Ghosh, ICFAI University Press, All Rights Reserved.
- Geographic Information Systems (GIS) for Disaster Management; Brain Tomaszewski, 2014. Routledge.
- IRS Guidelines by NDMA; (Available at NDMA website)
- Disaster Response and Planning for Libraries, Third Edition; Miriam B. Kahn, 2012, ALA Editions.
- Case Studies in Disaster Response and Emergency Management, 2nd Edition; Nicolas A. Valcik and Paul E. Tracy, 2012. American Society for Public Administration.
- Disaster Management in India: Structure and Challenges; Purohit Jyoti, 2013, Lambert Publication.
- Communicating Emergency Preparedness, Strategies for creating a Disaster Resilient Public; Damon, P.Copploa, Errin, K. Maloney CRC Press London.

REHABILITATION, RECONSTRUCTION AND RECOVERY DM20203CR

Course Outcome: This course is aimed to enhance the understanding of the students with respect to rehabilitation, reconstruction and recovery phase of disastermanagement. The students are expected to gain in–depth knowledge of physical, social and economic rehabilitation components and more importantly the learners will be able to know various rehabilitation processes and the services required in reconstruction phase. The course is designed to understand "Build Back Better" approach in RRR phase of disaster Management involving the restoration of the community livelihoods, amenities, critical infrastructure medical aid therapy, essential services, resource mobilization, Insurance, waste and debris management and employment generation with the intervention of foreign authorities, local government authorities national and international NGO's and CBO's

Credit-I

1. Rehabilitation, Reconstruction and Recovery (RRR): Concept and Types
2. Introduction to Short and Long Term Recovery Aspects
3. Community Participation in RRR
4. Priorities in Recovery
5. Capacity Building and Self-Help Initiatives

Credit -II

1. Disaster Rehabilitation: concept and significance
2. Physical, Economic and Social Rehabilitation
3. Resource Mobilization for Rehabilitation
4. Restoration of Basic Amenities
5. Medical Aid Therapy and Counseling- Psycho-Social Issues

Credit -III

1. Capacity Building for Reconstruction under BBB Approach
2. Development of Essential Services and Social Infrastructure
3. Creation of long term Job opportunities and Livelihoods
4. Opportunities and constraints in Reconstruction
5. Participatory Rural Appraisal (PRA)

Credit -IV

1. Role of Government in Disaster Recovery and Rehabilitation
2. Role of NGO's and Local Institutions in Disaster Recovery and Rehabilitation
3. Role of Insurance Companies in Disaster Recovery and Rehabilitation
4. Role of Media in Disaster Recovery and Rehabilitation
5. Monitoring and Evaluation of Rehabilitation Work

Suggested Readings

- Post-Earthquake Rehabilitation and Reconstruction; F.Y. Cheng and Y.Y. Wang, 1996.
- Disaster Management and Rehabilitation; Rajdeep Dasgupta, 2007.
- Disaster Response and Recovery: Strategies and Tactics for Resilience. David A. McEntire, 2014, Wiley Publications.
- DISASTER, VULNERABILITY AND REHABILITATION: A Study of Uttarakhand; Bindeshwar Pathak and Satyendra Tripathi. 2019. Rawat Publications.
- Disaster Preparedness and Rehabilitation; P. Chandra. Arise Publishers

GEOSPATIAL TOOLS FOR DISASTER MANAGEMENT DM20204CR

Course Outcome: Geo-informatics plays a significant role in disaster management. The said course highlights all the domains with respect to the application of Geospatial tools and techniques in disaster management. In this course students will get hands on experience on how satellite data and GIS and field observations can help in a better way to retrieve essential information for disaster risk reduction. Damage assessment associated with a particular disaster and mapping critical infrastructure at risk, pre and post disaster scenarios would also be covered.

Credit-I

1. GIS Framework for Disaster Management
2. Open Source GIS Softwares
3. Smartphone based GIS Apps
4. Acquisition of Satellite and GIS Data
5. Acquisition of Ancillary Data

Credit-II

1. Integration of Data Sets
2. Volunteered GIS Mapping
3. Mapping your Neighborhood
4. Flood inundation mapping
5. Identification of disaster shelter sites

Credit-III

1. Earthquake Magnitude Measurement
2. Earthquake Epicentre Location
3. Seismic Risk Mapping
4. Urban Fire Risk Mapping
5. Damage Assessment

Credit-IV

1. Water Quality Mapping
2. Temperature Variability Mapping
3. Rainfall variability mapping
4. Snowfall variability mapping
5. Landslide hazard Mapping

Suggested Readings:

- Comprehensive Disaster Management and Development; Leonard James Fendel, 2006.
- NIDM, Geoinformatics for Disaster Management, www.nidm.gov.in
- Geo-information for Disaster Management; Peter van Oosterom, Siykazlatanova, and Elfriede Huggins, 2007.
- Geoinformatics For Disaster Management; Rao, K V G, 2010.
- Geoinformatics For Disaster Management; K. Venu Gopal Rao.
- Remote Sensing and GIS Technologies for Monitoring and Prediction of Disasters Environmental Science and Engineering; Shailesh Nayak.

LEGAL FRAMEWORKS IN DISASTER MANAGEMENT DM20205DCE

Course Outcome: The course is designed to impart the learners a comprehensive understanding of the disaster management initiatives and the legal provisions at international, national and regional level. The legal and constitutional arrangements by most of the countries in the wake of global protocols United Nations, regional partners and other member states in the field of disaster management have proven fruitful in reducing the disaster risk through mitigation.

Credit-I

1. International Decade for Natural Disaster Reduction, 1990's
2. Yokohama Strategy, 1994
3. International Disaster Response Laws, Rules & Principles (IDRL), 2007
4. Hyogo Framework, 2005-2015
5. Sendai Framework for Disaster Risk Reduction, 2015-2030

Credit-II

1. International Health Regulations, 2005
2. Nuclear Accident Convention, 1986
3. Tampere Convention**,** 1998
4. Convention on Oil Pollution, 1990
5. International Decade for Action- Water for Sustainable Development 2018-2028

Credit-III

1. The Water (Prevention and Control of Pollution) Act, 1974
2. National Disaster Management Act, 2005
3. National Disaster Management Plan, 2016
4. National Building Codes, 2016
5. Dam Safety Bill, 2019

Credit-IV

1. The Jammu and Kashmir Natural Calamities Destroyed Areas Improvement Act, 2011
2. Jammu and Kashmir Forest Act, 1987
3. J&K Forest Fire Management Plan, 2016
4. J&K Water Policy and Plan, 2017
5. J & K State Disaster Management Plan (SDMP), 2017

Suggested readings

- Disaster management; H.K. Gupta, 2003.
- https://www.iaea.org
- https://www.jk.gov.in
- Jammu and Kashmir Disaster Management Department; jklaw.nic.in
- Jammu Kashmir Forest act; www.jkdears.com
- JK Pollution Control Board; jkspcb.nic.in
- jkswrra.nic.in/act.pdf
- Risk Issues and Crisis Management in Public Relations; Michael Regester, and Judy Larkin, 2008.
- National Building Code; www.bis.org.in
- World Disaster Conferences https://en.wikipedia.org/ www.iaru.org/ www.ifrc.org/ www.imo.org/ www.moef.nic.in/ www.ndma.gov.in/ www.nidm.gov.in/ www.unisdr.org/ Https://www.fema.gov/ http://www.unisdr.org/

COMMUNITY BASED DISASTER MANAGEMENT DM20206DCE

Course Outcome: The present course is designed to promote understanding that the Community being the first respondent in the wake of a disaster requires special attention in order to mitigate the disaster impacts by means strengthening the relevant components of disaster management such as search and rescue, first aid and evacuation and short term relief and rehabilitation. The principles, approaches and the comprehensive framework of CBDM is taught in the course

Credit I

1. CBDM- Concept and Significance
2. Components of CBDM
3. Principles of CBDM
4. Characteristics of Safe and Resilient Community
5. Disaster Management and Community Planning

Credit II

1. Community based Disaster Capacity and Skill Development Training Programmes
2. Community Disaster Response Team
3. Role of Social Workers in CBDM
4. Role of *Panchayat* Raj Institutions and Village Disaster Management Committee
5. Gender, Minority and Ethnic Dimensions in Disaster Management

Suggested Readings:

- An Introduction to Disaster management; S. Vaidyanatahn.
- Disaster Response and Recovery: Strategies and Tactics for Resilience; David A. McEntire, 2014, Wiley Publications.
- Disaster Response and Emergency Management; Alfred Scott, 2016, Syrawood Publishing House.
- IRS Guidelines by NDMA (Available at NDMA website)
- Encyclopaedia of Disaster and Hazards Management; Rajesh K Yadav et al. Oxford Book Company.
- Post-Earthquake Rehabilitation and Reconstruction; F.Y. Cheng and Y.Y. Wang, 1996.
- Disaster Management and Rehabilitation; Rajdeep Dasgupta, 2007.

WASTE AND DEBRIS MANAGEMENT DM20207DCE

Course Outcome: This course is aimed to provide the students awareness about the clean–up, removal, mitigate and disposal of debris and wastefollowing a major disaster. Further the said course also provides an insights regarding framing and identifying debris management plan at site. At the end of course, students should be able to know how to handle the hazardous and non-hazardous debris and waste.

Credit -I

1. Waste and Hazard Debris: Sources and Types
2. Debris and Municipal Waste Management – Need and Significance
3. Factors Affecting Municipal Waste and Debris Management
4. Disaster Debris Management Cycle
5. Municipal Waste Prevention Strategies

Credit -II

1. EPA's Guidelines for Disaster Waste Management Plan
2. Temporary Debris Management Areas (TDMA's)
3. Identifying Municipal Waste and Debris Management Sites
4. Operation Plan for Disaster Debris Management- Connecticut's Concept (ConOps).
5. Challenges and Issues in Municipal Waste and Debris Management

Suggested Readings:

- Environmental impacts with waste disposal practices in a suburban municipality in Sri Lanka; Bandara, and Hettiaratchi, 2010. Inderscience Publishers.
- Biomedical Waste (Management and Handling) Rules, 1998.
- Solid Waste Management – Collection, Processing and disposal; D. Bhide and B.B. Sundaresan, 2001. Mudrashilpa Offset Printers, Nagpur.
- Municipal Solid Waste in India — Overview and Challenges, World Bank Environment Unit South Asia Region; Hanrahan, D., S. Srivastava, and A. Ramakrishna, 2005.
- Environmental Science and Engineering; J. Glynn Henry and Gary. W. Heinke, 2004, Prentice Hall of India.
- UN-Habitat, Solid Waste Management in the World's Cities, 2009.
- https://www.epa.gov/sites/production/files/2016-03/documents/industrial-waste-guide.pdf

INTRODUCTION TO SEISMIC RISK REDUCTION DM20208DCE

Course Outcome: Earthquake being the one hazard that comes with no warning thus requires different kind of prevention mitigation andpreparedness measures.The course is expected to familiarise the learners about the nature and consequences of earthquakes, magnitude and intensity, poor technological advancement for the prediction and forecasting of the earthquakes *vis-à-vis* the need of different preventive measures especially the structural measures. The course would make the learners aware about various traditional and modern architectural designs for buildings. The course also aims at NDMA guidelines, National building codes and byelaws for construction of seismic resistant structures to mitigate the impacts of seismic disasters.

Credit- I

1. Seismic Risk: Concept
2. Earthquake Occurrence and Measuring Scales
3. Earthquake Prediction
4. Seismic Zonation
5. Liquefaction and Mitigation Methods

Credit- II

1. Earthquake Mitigation Strategies
2. Earthquake Mitigation Measures at Home
3. NDMA Guidelines on Management of Earthquakes 2007
4. Guidelines for Mud and Brick Construction in J&K
5. Traditional Earthquake Resilient Construction practices (Taq and Dhajji-Dewari)

Suggested Readings

- Earthquake & Natural Disasters; Manik Kar.
- Natural hazards & DM Vulnerability & Mitigation. Singh R.B.
- Safety and Disaster Management Methods, Techniques, Recent Approach, Major Events & Exist Framework Hazardous Material; Dutta O. P.
- Geological HazardsTheir assessment avoidance and mitigation; Bell, F.G. Routledge, London,
- Earthquake Research and Analysis; Sebistiano D. Amico, 2014, Intech.
- Basic Search & Rescue Skills Emergency Response International; www.erionline.com.
- Earthquake Prediction; www.world-earthquakes.com
- Earthquake Safety; http://www.bmtpc.org
- Earthquake Tips; http://www.nicee.org
- Safety and Disaster Management Methods, Techniques, Recent Approach. O. P. Dutta.
- School Safety Initiatives, Geo Hazards Society; http://www.geohaz.in.
- Disaster Safe Homes; Warne Josheph.

FLOOD HAZARD MANGEMENT DM20002GE

Course Outcome: Floods are major and frequent disasters affecting various parts of India. About 12 percent of the country is exposed to periodic floods. In thiscourse learners would be updatedabout causes, types, effects, mitigation and response strategies for the flood hazard.

Credit-I

1. Flood as a Hazard
2. Trends in Hydrological Disasters
3. Flood Hazard Measurement: Hydrograph and Flood Frequency
4. Flood Mitigation and Preparedness
5. Role of ICT in Flood Management

Credit-I

1. Flood Crisis Management
2. Flood Management Guidelines
3. Community as a First Respondent
4. Flood Waste and Debris Management
5. Role of Media and Disaster Response Force in Flood Management

Suggested Readings

- Flood Disaster Risk Management - Hydrological Forecasts - Requirements and Best Practices: Training Module; A. Vogelbacher, 2013.
- Basic Search & Rescue Skills Emergency Response International; www.eri-online.com
- Flood Safety (http://www.geohaz.in/flood-safety/)
- Flood Warning, Forecasting and Emergency Response; Kevin Sene, 2008, Springer Publications.
- Hydro-meteorological Hazards; www.nidm.gov.in.

INTRODUCTION TO HUMAN-INDUCED DISASTERS DM20002OE

Course Outcome: The course would particularly emphasize on disasters induced by humans. Discussion on potential hazards andeffects would be focus here. In addition, the course would cover the deliberations on various case studies.

Credit-I

1. Chemical, Biological, Radiological and Nuclear Hazards
2. Air Pollution
3. WaterPollution
4. Epidemics
5. Cyber Crimes

Credit- II

1. Accidents: Rail, Road and Air
2. Fires: Urban and Forest
3. Deforestation and Land Degradation
4. Mine Disasters and Dam Failures
5. Civil Strife

Suggested Readings

- Environmental Disasters; K. K Singh. *et. al.* APH Publishers
- An Introduction to Disaster management; S. Vaidyanatahn.
- Bandla Srinivas: Text Book of Disaster Management. ATPA.
- Encyclopaedia of Disaster and Hazards Management; Rajesh K Yadav., et al. Oxford Book Company
- Man-made Disasters; Barry A. Tuner, Nick Pidgeon.
- Encyclopedia of Disaster Management; P.C Sinha. Anmol Publishing House.
- Century of Man-Made Disasters (Images of the Past); Nigel Blundell, 2019. Pen and Sword History Pub.
- Catastrophes and Heroes: True Stories of Man-made Disasters; Jerry Borrowman , 2020. Shadow Mountain Pub**.**

Semester-III

Course Structure : M.A./ M.Sc. Disaster Management

Course Code	*Course Title*	*Category*	*Hours during a week*			*Credits*
			Lecture	*Tutorial*	*Practical*	
DM20301CR	**Disaster Mitigation and Preparedness**	**Core**	**4**	**2**	**0**	**4**
DM20302CR	**Disaster Risk Assessment**	**Core**	**4**	**2**	**0**	**4**
DM20303CR	**DRR and Developmental Planning**	**Core**	**2**	**1**	**0**	**2**
DM20304CR	**Field and LaboratoryTraining for Disaster Management**	**Core**	**0**	**0**	**8**	**4**
DM20305DCE	**Disaster Economics**	**Discipline Centric Elective**	**4**	**2**	**0**	**4**
DM20306DCE	**Flood Risk Management**	**Discipline Centric Elective**	**2**	**1**	**0**	**2**
DM20307DCE	**Statistical Techniques For Disaster Management**	**Discipline Centric Elective**	**2**	**1**	**0**	**2**
DM20308DCE	**Disaster Sensitive Land Use Planning**	**Discipline Centric Elective**	**2**	**1**	**0**	**2**
DM20309DCE	**Drug Menace and Human Trafficking**	**Discipline Centric Elective**	**2**	**1**	**0**	**2**
DM20003GE	**Hazard Profile of India**	**Generic Elective**	**2**	**1**	**0**	**2**
DM20003OE	**Emergency Response to Hazards**	**Open Elective**	**2**	**1**	**0**	**2**
Total Contact Hours:		**Total Credits: 30**				

DISASTER MITIGATION AND PREPAREDNESS DM20301CR

Course Outcome: The present course is designed to provide the learners an in-depth understanding of how to minimise the impact of hazards and disasters through various structural and non-structural measures by explaining the significance of planning and preparedness involving different stake holders in a hierarchical and coordinated manner. The learners would come to understand the importance of disaster mitigation and preparedness part of the disaster management cycle

Credit-I

1. Disaster Mitigation: Concept and Principles
2. Disaster Mitigation Strategies: Structural and Non-structural
3. Disaster Mitigation Strategies with reference to Cyclones, Drought, Floods and Landslides
4. Emerging Trends in Disaster Mitigation
5. Disaster Mitigation Programs in India

Credit-II

1. Disaster Preparedness: Concept and Significance
2. Disaster Preparedness Measures
3. Institutional Mechanism for Disaster Preparedness
4. Disaster Preparedness for People with Special Needs and Vulnerable Groups
5. Disaster Preparedness with reference to Housing and Infrastructure

Credit-III

1. Disaster Preparedness Plan: Concept and Significance
2. Essentials of Disaster Preparedness Plan
3. Community Based Disaster Preparedness- Need and Significance
4. Community Based Disaster Preparedness Plan
5. Community Participation- Task Force Formation, Training and Capacity Building

Credit-IV

1. Emerging Technologies in Disaster Preparedness and Mitigation
2. Role of IEC and Training in Disaster Preparedness and Mitigation
3. Role of International Agencies
4. NGO's in Disaster Preparedness and Mitigation
5. Role of Media in Disaster Preparedness

Suggested Readings

- Disaster and Development; Andrew E. Colins, 2009. Routledge.
- Disaster Management Handbook; Jack Pinkowski, 2008.
- Hazard Mitigation and Preparedness: An Introductory Text for Emergency Management and Planning Professionals; 2nd Edition; Anna K. Schwab , Dylan Sandler, *et al.* 2016. CRC. Press.
- Disaster Management and Rehabilitation; Rajdeep Dasgupta, 2007.
- Community Based Disaster Risk Reduction; Rajib Shaw, 2012.
- Disasters, Development and People; Mapping Vulnerability; Greg Bankoff and Georg Frerks, 2013.
- Disaster Risk Reduction in South Asia; Pardeep Sahni, 2003, Prentice Hall of India, New Delhi.

DISASTER RISK ASSESSMENT DM20302CR

Course Outcome: Risk assessment being an area of immediate importance for disaster risk reduction. During this course students will be familiarised with the important components, approaches and other process involved in risk assessment. It also discusses the essentials of risk reduction and the targets for risk reduction with respect to specific natural hazards.

Credit-I

1. Concept of Disaster Risk Assessment
2. Inter-relationship between Hazard, Vulnerability and Disaster Risk
3. Disaster Risk Drivers
4. Global Risk Trends
5. Disaster Database Sources

Credit-II

1. UNDP Approach in Risk Assessment
2. UNDRR endorsed National Disaster Risk Assessment (NDRA)
3. Cross-border Risk Assessment
4. Participatory Disaster Risk Assessment
5. Disaster Risk Management

Credit-III

1. Methods for Risk Assessment
2. Tools in Disaster Risk Assessment
3. Disaster Risk Index
4. Damage, Loss and Needs Assessment Methods (DaLA, PDNA)
5. Disaster Risk Governance

Credit-IV

Hazard Specific Risk Assessment in context with:-

1. Earthquakes
2. Floods
3. Landslides
4. Wildfires
5. Biologic

Suggested Readings

- Risk Assessment and Disaster Management; Akshaya Kumar Nayak & Kadambari Sharma.
- Disaster Risk and Impact Management, Approaches Tools and Strategies; Anil K Gupta Vnod, K. Sharma, Sreeja. Daya Pub House/Unit of Intl. Pvt. Ltd.
- Disaster Risk Reduction in South Asia; Pardeep Sahni and Madhavi Malalgoda Ariyabandu, 2003.
- Natural Disaster Risk Management and Financing Disaster; Reinhard Mechler, 2004.
- Risk assessment and disaster response; Siddhartha Gautam. Vista International Publishing House
- Disaster Risk Management Systems Analysis: A Guide Book; Stephan Baas, 2008.
- UNDRR- National Disaster Risk Assessment www.undrr.org
- Disaster Management and Risk Reduction; Vishwa Bahar Prasad Seti.
- Community-Based Disaster Risk Reduction; Rajib Shaw, 2012.
- Handbook of Hazards and Disaster Risk Reduction; Wisner J.C. Gaillard LLan Kelman.

DISASTER RISK REDUCTION AND DEVELOPMENTAL PLANNING DM20303CR

Course Outcome: This course covers various aspects of disaster risk reduction and development planning. The learners are expected to understand linkages between disasters and developmental planning; institutional arrangements for planning at International, National and Regional level andget understanding of how developmental planning can minimize the losses associated with disasters.

Credit - I

1. Evolution and Objectives of DRR
2. International Mobilization for Risk Reduction
3. **Case Studies** of DRR Initiatives at National and Regional Level
4. DRR Master Planning for Sustainable Development
5. Community Based DRR

Credit - II

1. Disaster-Development Relationship
2. Developmental Planning in Context of DRR
3. Developmental Planning in Relation to Capacity, Resilience and Vulnerability
4. Decision Making for DRR
5. Application of IEC and Technology in DRR

Suggested Readings:

- Disaster and Development: Examining Global Issues and Cases (Environmental Hazards); Naim Kapucu and Kuotsai Tom Liou, 2014. Springer Pub.
- Mapping Vulnerability: Disasters, Development and People; Greg Bankoff and Georg Frerks, 2013.
- Natural Disaster and Development in a Global World; Mark Pelling, 2003. Routledge.
- Disaster and Development; Misanya Doreau, 2011. VDM Variag Publishers.
- Disaster and Development: An Occupational Perspective; Nancy Rushford and Kerry Thomas, 2015. Churchill Livingstone.
- Disaster Risk Reduction in South Asia; PardeepSahni, 2003, Prentice Hall of India, New Delhi.
- Disaster and Development: An Occupational Perspective; Nancy Rushford. 2015. Churchill Livingstone Pub.

FIELD and LABORATORY TRAINING FOR DISASTER MANAGEMENT DM20304CR

Course Outcome: During this course, students will be taken to field and exposed to socio-economic cum geo-physicalenvironment, so that they are able to evaluate the different dimensions of hazard, vulnerability, exposure, and risk. The students will also get familiar with the important aspects which shall be kept in mind while preparing any disaster management plan. Students will also carry out rapid visual screening of selected buildings pertaining to different hazards. In the lab various exercises / audio visual/ mock drill / simulation exercises will be carried out.

Note: In the field studies course each student shall have to prepare a brief field report on Disaster Management Plan (As per nature and purpose of the field).

Credit-I

1. Table Top Exercises for Disaster Managers
2. Audio-visual /Simulation Exercises
3. Mock Drills
4. Rapid Visual Screening of Educational and Healthcare Institutions
5. Shelter Management

Credit-II

1. Search and Rescue
2. Evacuation
3. Emergency First Aid
4. Emergency Medical Triage
5. Psychological Debriefing of victims

Credit-III

1. Activities- Preparation of Field Visit Plan,
2. Questionnaire Designing
3. Visit to hazard prone areas-Field Observation of Vulnerability and Risk, Collection of Data
4. Identification and Interpretation of Geomorphic Features /Geological Structures in the Field
5. Interpretation of Landslide Surface Morphology

Credit- IV

Compilation and Preparation of Filed Report

Marks Distribution
Writing and Presentation= 60 Marks
Lab. Component =20 marks
Internal= 20 Marks

Suggested Readings:

- The Field Guide to Geology; David Lambert, 2007.
- Handbook of Disaster Research; Enrico L. Quarantelli, and Russell Dynes, 2007. Havidan Rodriguez,
- Methods of Disaster Research; Robert A. Stallings, 2003.
- Field Operations Guide for Disaster Assessment and Response; U.S. Agency for International Development. 2013. Skyhorse Pub.

DISASTER ECONOMICS DM20305DCE

Course Outcome: The course is aimed to help the learners in understanding the short and long term impacts of disasters on the economy of the affected community. The course highlights the need of disaster compensation, Post disaster Impact Assessment, Estimation of disaster losses, Disaster risk finance and Insurance, global facility for disaster reduction and recovery and Institutional arrangements for disaster risk management, Catastrophe Modelling, SIA, Disaster Risk matrix and Modelling; Funding and triangular Food Aid to mitigate the disaster impacts for ensuring quick recovery in the wake of a disaster.

Credit -I

1. Economic and Financial Implication of Disasters
2. Primary and Secondary Impacts of Disasters on Economy
3. Post Disaster Impacts on Market and Economy
4. GDP, Price, Supply Shock, Consumption Shockand Price Control
5. Disaster Compensation

Credit -II

1. Post Disaster Impact Assessment
2. Estimation of Disaster Losses
3. Catastrophe Modeling (Cat Modeling)
4. Social Impact Assessment (SIA)
5. Modeling of Disaster Implications on Economy

Credit -III

1. Disaster Risk Management for Resilient Development
2. Disaster Risk Analysis
3. Disaster Risk Matrix
4. Risk Exposure, Risk Bearing Capacity and Financial Vulnerability
5. Disaster Deficit Index and Economic Resilience

Credit -IV

1. Disaster Risk Transfer and Catastrophe Bonding
2. Global Facility for Disaster Reduction and Recovery (GFDRR)
3. Debit Swaps, Blocked Funds and Revolving Funds
4. Triangular Food Aid
5. Disaster Risk Finance and Insurance (DRFI)

Suggested Readings:

- Natural Hazards, Unnatural Disasters: The Economics of Effective Prevention. Nov. 11, 2010. World Bank Publications.
- Advances in Spatial and Economic Modeling of Disaster Impacts; Advances in Spatial Science, 2019. Springer Pub.
- Economic Effects of Natural Disasters: Theoretical Foundations, Methods, and Tools. 2020; Taha Chaiechi. Academic Press.
- Supply Chain Resilience: Reducing Vulnerability to Economic Shocks, Financial Crises, and Natural Disasters, 1st ed.; Anbumozhi. 2020. Springer.
- Disaster Risk and Impact Management, Approaches Tools and Strategies; Anil K Gupta Vnod, K. Sharma, Sreeja. Daya Pub House-Unit of Intl. Pvt. Ltd.
- Disaster Risk Reduction in South Asia; Pardeep Sahni and Madhavi Malalgoda Ariyabandu, 2003.
- Natural Disaster Risk Management and Financing Disaster; Reinhard Mechler, 2004

Flood Risk Management DM20306DCE

Course Outcomes:

The learners are expected to understand fundamental science of geo-hydrological processes, cycle and its dynamics for applications to mitigate the global water crisis for sustainable development through proper water resource management. The course is expected to train the learners for analysis of hydrological data and policy framing with the help of their systematic understanding of the dynamic nature of hydrological stores and fluxes, measurements, analysis, variability and forecasting.

Credit -I

1. Hyetograph & Runoff
2. Drainage basin characteristics
3. Hydrograph concepts assumptions and limitations of unit hydrograph
4. Derivation of unit hydrograph
5. Flow duration curve.

Credit -II

1. Indian Rivers- flood vulnerability
2. Causes of flooding
3. Hydrological Analysis for Flood Management
4. Flood Frequency and Engineering Designs.
5. Structural and Non-structural Measures for Flood Management.

Reference Books:

- Hydrology and Water Resources Engineering; Garg S.K.
- Engineering Hydrology; Subramanian, K., Tata McGraw Hill, New Delhi.
- Groundwater; Raghunath, H.M., 1987, Wiley Eastern Ltd., New Delhi.
- Irrigation Water Resources and Water Power Engineering; Modi, P.N. Standard Book House, New Delhi.
- Groundwater Hydrology; Todd, D.K. 1993. John Wiley & Sons.
- Hydrology – Principles, Analysis and Design; Raghunath, H.M., 1986,.Wiley
- A Textbook of Hydrology; Dr. P. Jaya Rami Reddy. University Science Press

STATISTICAL TECHNIQUES FOR DISASTER MANAGEMENT DM20307DCE

Course Outcome: Considering the broad scope for research in disaster management, this course covers different processes and methods involved in quantifying processes, and impacts in the field of disaster management. This course will enhance the statistical skills of the students while and will be useful for analysis of events, understanding behaviour and trends.

Credit-I

1. Statistical Analysis in Disaster Management
2. Data Collection and Processing
3. Sampling and its Types
4. Hypothesis and its Types
5. Hypothesis Testing

Credit-II

1. Correlation and Regression Analysis
2. Time Series Analysis
3. Analytical Hierarchy Process (AHP)
4. Composite Index
5. Mann Kendall and ANOVA Test

Suggested Readings:

- Basic Statistics; B. L. Agarwal, 2006.
- Fundamental Statistics for the Behavioral Sciences; David Howell, 2010.
- Poor Economics: Rethinking Poverty & the Ways to End it; Abhijit V. Banerjee, 2013. Penguin. Pub.
- Principles of Statistics; M. G. Bulmer, 1979.
- Introductory Statistics; Sheldon M. Ross, 2010.

DISASTER SENSITIVE LAND USE PLANNING DM20308DCE

Course Outcome: Human practices have increased the risk and vulnerability towards disasters by many folds. Improper land use planning being theprimary indicator of the human influence on the vulnerability. This course provides a framework and processes for analyzing the responsiveness of land use planning practice and their enforcement in relation to disaster risk reduction.It explains the concept, relevance, principles, factors, drivers, and methodology of risk sensitive land use planning.

Credit-I

1. Disaster Sensitive Land Use Planning – Concept, Objectives and Significance
2. Factors Governing Land Utilization
3. Drivers of Land Use Changes
4. Land Use Zoning, Land Suitability and Land Sensitivity
5. Land Use Policy of India

Credit-II

1. Principles of Disaster Sensitive Land Use Planning
2. Methodology for analyzing Risk Sensitive Landuse Planning
3. Risk Sensitive Landuse Plan Preparation
4. Role of Risk Sensitive Landuse Planning in Building Resilient Cities
5. Urban Disaster Management Toolkit.

Suggested Readings:

- Urban Land Use Planning, 4th Edition; Edward S. Kaiser and F. Stuart Chapin, 1957.
- Land Use Planning Made Plain; Hok-Lin Leung, 2003, University of Toronto Press.
- Land-Use Planning for Sustainable Development, Second Edition; Jane Silberstein, M.A., and Chris Maser, 2013, CRC Press.
- Environmental Land Use Planning and Management. John Randolph, 2004.
- Land Use Planning and Development Regulation Law, Thomas West. Julian Conrad Juergensmeyer and Thomas E Roberts, 2003.
- Urban Land Use Planning, 5th Ed., Philip R. Berke, David R Godschalk, 2006. University of Illinois Press.
- Land Use Planning, Techniques of Implementation; T. William Patterson, 1979. Van Nostrand Reinhold Company.

DRUG MENACE AND HUMAN TRAFFICKING DM20309DCE

Course Outcome: The menace of substance abuse in the young generation has assumed alarming dimensions worldwide. During this coursethe students will get to know about the international, national and local drug and narcotic scenarios and human trafficking in the world.

Credit - I

1. Drugs and Narcotics: A Brief Introduction
2. Causes and Consequences of Drug Addiction
3. Drug Addiction and Illegal Use of Substances: National and International Scenario
4. Drug Addiction Scenario in India and J & K and Legal Provision of Narcotics Act
5. Drug De-addiction and Psychosocial Rehabilitation of Drug Addicts

Credit - II

1. Human Trafficking as a Social Hazard: Causes and Consequences
2. Role of International Agencies in Combating Human Trafficking
3. Human Trafficking in South East Asia
4. Human Trafficking in Central America
5. Human Trafficking in Central Africa, Middle East and North Africa

Suggested Readings:

- Drug Addiction Recovery: The Mindful Way; Christopher Dines, 2019. Sheldon Press.
- Child Exploitation and Trafficking; Virginia M. Kendall, and T. Markus Funk, 2012.
- Human Trafficking: A Global Perspective; Louise Shelley, 2010.Cambridge University Press.
- Drug Addiction, Criminal Justice and Human Rights; Shyamlal Verma, 2018. Generic Pub.
- Human Trafficking: A Global Perspectiv; Louise Shelley, 2010. Cambridge University Press.
- Combating Human Trafficking: Gaps in Policy and Law; Veerendra Mishra, 2015. SAGE India Pub.

HAZARD PROFILE OF INDIA DM20003GE

Course Outcome: India's uniquegeo-climaticposition makes it vulnerable to many hazards. The Spatio-temporal variability of India with respect hazards, vulnerability, exposure, and risk would be covered in this course. The course will also illustrate the causes and consequences of historical disasters in India.

Credit-I

1. Hazard Profile of India: An Overview
2. Earthquakes and Tsunami
3. Landslides and Snow Avalanches
4. Floods/ Flash Floods and Drought
5. Cyclones

Credit-II

1. Chemical Biological Radiological and Nuclear (CBRN) Disasters
2. Road and Rail Accidents, Building Collapses
3. Pest Attacks, Epidemics
4. Urban and Forest Fire.
5. Mine Disasters, Dam Failure

Suggested Readings:

- Purohit Jyoti, 2013, Disaster Management in India: Structure and Challenges, Lambert Publication.
- A Manual on Disaster Management. Parag Diwan, 2010. Pentagon Earth.
- Disaster Management; G. K. Gosh., A.P.H. Publishers.
- India Disasters Report II: Redefining Disasters; Parasuraman S. and Unni Krishnan, 2013. Oxford University Press.
- On Disasters in India; Anu Kapur, 2011. Foundation Books.
- DISASTER MITIGATION: EXPERIENCES AND REFLECTIONS; Pardeep Dhameja, 2004. PHI Pub.
- Disaster Management in India; Rajendra Kumar Pandey, 2020. SAGE Publications India Pvt Ltd.
- https://nidm.gov.in/books.asp
- https://ndma.gov.in/

INCIDENT RESPONSE SYSTEM AND EMERGENCY RESPONSE DM20003OE

Course Outcome: The prompt and pro-active response to disasters can save millions of lives and reduce the overall adverse impact of disasters. This course highlights the role and responsibilities of incident response system for effective disaster response and theemergency response to different extreme events such as fire, floods etc.

Credit-I

1. Development of Incident Response System
2. Features and Logistics of Incident Response System
3. Incident Response Organizational Setup
4. Incident Resource Management
5. Role of Media in Emergency Response

Credit-II

Emergency Response to

1. Fire Hazard
2. Flood Hazard
3. Chemical Hazard
4. Nuclear Hazard
5. Road/ Rail Accidents

Suggested Readings:

- Disaster Management Guidelines for Incident Response Information and Communication System; Reepunjaya Singh, 2016. Horizon Press
- Principles of Incident Response and Disaster Recovery. International Ed. 2013. Course Technology Inc.
- Disaster Response and Emergency Management; Alfred Scott, 2016. Syrawood Publishing House.
- IRS Guidelines by NDMA; Available at NDMA website.
- Case Studies in Disaster Response and Emergency Management. 2nd Ed; Nicolas A. Valcik and Paul E. Tracy, 2012. American Society for Public Administration.
- Disaster Management in India: Structure and Challenges; Purohit Jyoti, 2013. Lambert Publication.
- Basic Search & Rescue Skills Emergency Response International; www.erionline.com.
- Earthquake Safety; http://www.bmtpc.org/
- Safety and Disaster Management Methods, Techniques, Recent Approach; O. P. Dutta.
- School Safety Initiatives; Geo Hazards Society. http://www.geohaz.in/
- Earthquake Research and Analysis; Sebistiano D. Amico, 2014. Intech.

Semester-IV

Course Structure : M.A./ M.Sc. Disaster Management

Course Code	*Course Title*	*Category*	*Hours during a week*			*Credits*
			Lecture	*Tutorial*	*Practical*	
DM20401CR	**Crisis Management and Incident Response System**	**Core**	**4**	**2**	**0**	**4**
DM20402CR	**Psychosocial Care in Disaster Management**	**Core**	**4**	**2**	**0**	**4**
DM20403CR	**Climate Change**	**Core**	**2**	**1**	**0**	**2**
DM20404CR	**Dissertation**	**Core**	**0**	**0**	**8**	**4**
DM20405DCE	**Environment Impact Assessment and Environmental Management Programme**	**Discipline Centric Elective**	**4**	**2**	**0**	**4**
DM20406DCE	**Conflicts and Geopolitical Issues**	**Discipline Centric Elective**	**2**	**2**	**0**	**2**
DM20407DCE	**Disaster Management for Critical Infrastructure**	**Discipline Centric Elective**	**2**	**1**	**0**	**2**
DM20408DCE	**Disasters and Public Health**	**Discipline Centric Elective**	**2**	**1**	**0**	**2**
DM20004GE	**Search and Rescue Operations**	**Generic Elective**	**2**	**1**	**0**	**2**
DM20004 OE	**Community Based Disaster Management**	**Open Elective**	**2**	**1**	**0**	**2**
Total Contact Hours:		**Total Credits: 28**				

CRISIS MANAGEMENT AND INCIDENT RESPONSE SYSTEM DM20401CR

Course Outcome: The course has been designed to expose learners to potential crisis situations, functioning of crisis management and managing economy, essential services and media during crisis situations. The students will also be familiarized with the role of international and national emergency management teams to handle crisis, the structure and functioning of incident response system for effective disaster response in India and finally students will be trained to prepare crisis management plan.

Credit-I

1. Crisis: Concept and Types
2. Identifying Potential Crisis Situations
3. Crisis Management: Concept
4. Objectives and Features
5. Crisis Management Approaches

Credit II

1. SOP's for Crisis Management
2. Crisis Management: Preparedness
3. Crisis Management: Training and Testing
4. Crisis Communication Plan
5. Emergency Management Teams

Credit III

1. Role of ICT in Crisis Management
2. Role of Media in Crisis Management
3. Managing Media during Crisis Management
4. Managing Economy and Essential Services during Crisis
5. Role of Leadership in Managing Crisis Situations

Credit IV

1. IRS – Concept, Development
2. IRS—Features and facilities
3. IRS – Organizational structure
4. Incident Resources Management
5. Preparation of Crisis Management Plan

Suggested Readings

- A Futurist's Guide to Emergency Management. Adam S. Crowe, 2016. Springer Publications
- Managing Crisis: Response to Large Scale Emergencies; Arnold M. Howitt and Herman B. Leonard, 2009.
- Crisis Management Planning and Execution; Edward S. Devlin, 2006.
- Crisis Intervention Training for Disaster Workers: An Introduction; George E. Doherty, 2013.
- Urban Resilience for Emergency Response and Recovery; Gian Paolo Cimellaro, 2016. Springer
- Crisis Management - Master the Skills to Prevent Disasters; Harvard Business Essentials, 2011.
- Disaster Recovery, Crisis Response, and Business Continuity: A Management Desk Reference; Jamie Watters, 2014.
- Risk Issues and Crisis Management in Public Relations; Judy Larkin and Michael Regester, 2008.
- Flood Warning, Forecasting and Emergency Response. Kevin Sene, 2008. Springer Publications.
- Training Module Incident Response System, Basic and Intermediate; NIDM, 2015.
- Crisis Management: Planning for the Inevitable; Steven Fink, 2002, IUniverse.
- Crisis Managementl Steven Fink.
- Crisis Management: Master the Skill to Prevent Disasters; Suresh Goel, 2009
- The Capacity Crisis in Disaster Risk Management; Tiwari Asmita, 2015, Springer Publications.

PSYCHOSOCIAL CARE IN DISASTER MANAGEMENT DM20402CR

Course Outcome: The course is designed to understand the human behaviour during and after the disasters. This course highlights the psychological problems faced by the relief providers as well as the victims and how to manage human behavior through psychosocial care. It also focuses on psychosocial care management at international, national and regional level.

Credit I

1. Disaster Psychological Care: Concept
2. Psychological Implications of Disasters
3. Principles of Psychological Support
4. Techniques of Psychological Care
5. Psychological Care Essentialities

Credit II

1. Psychological Care Ethics
2. Psychological First Aid
3. Understanding Psychological Needs of Victim
4. Psychological Needs of Vulnerable People and Special Needs
5. Psychological Needs of Rescuer

Credit-III

1. Psychosocial Response
2. Psychological Debriefing
3. Stress Management
4. Rumor and Panic Management
5. Role of Information, Communication and Technology (ICT) in Psycho-social Response

Credit-IV

1. Psycho-social Care Management at International level
2. Psycho-social Care Management in India
3. Role of Different Government Agencies
4. Role of NGOs
5. Community Participation in Psychosocial Care Management

Suggested Readings

- Disaster Management Psycho-Social Support and Health Services; Braj Kishore Prashad Singh, 2010. Sumit Enterprises.
- Disaster Mental Health Services, Diane Myers and David Wee, 2004. Routledge Pub.
- IRS Guidelines by NDMA (Available at NDMA website)
- Disaster Response and Planning for Libraries, Third Edition; Miriam B. Kahn, 2012. ALA Editions.
- Case Studies in Disaster Response and Emergency Management, 2nd Edition; Nicolas A. Valcik and Paul E. Tracy, 2012. American Society for Public Administration.
- Disaster Management in India: Structure and Challenges; Purohit Jyoti, 2013. Lambert Publication.

CLIMATE CHANGE DM20403CR

Course Outcome: Climate change being the most challenging Phenomenon of the present times. The course has been introduced to enable studentsto get insight about the genesis of climate change, its causes and implications and its interrelationship with various disasters. This course also focuses on the policy frameworks, mitigation & adaptation strategies and livelihood protectionto combat the effects of climate change.

Credit-I

1. Climate Change- A Historical Perspective
2. Impacts of Climate Change on Global Disaster Scenario
3. Emerging Trends of Climate Disasters
4. Climate Change: Drivers and Global Issues
5. Climate Change and DRR

Credit-II

1. Climate Change : Adaptation and Mitigation
2. Climate Change and Livelihood Protection
3. Policy Framework and Legislation
4. Resilience in Context of Indian- Subcontinent and JK
5. Economics of Climate Change

Suggested Readings

- Historical Perspectives on Climate Change; James Rodger Fleming, 1998. Oxford University Press.
- Climate Change: A Very Short Introduction; Mark Maslin, 2014. Oxford University Press.
- Climate Change: A Natural Hazard; William Kininmonth, 2004. Multi-science Publishing co. Ltd.
- Climate Change: Legal Issues & Contexts (Climate Change and Its Causes, Effects and Prediction: Laws and Legislation); Bailey summers and Ross A Diaz, 2013. Nova Science Publisher UK. Ed.
- Climate Change: Action, Trends and Implications for Business; Cambridge University (2013).
- IEA Training Material: Vulnerability and Climate Change Impact Assessment for Adaptation; IISD, UNITAR & UNEP (2009).
- The Physical Science Basis - Summary for Policymakers; Climate Change 2013, IPCC, 2013.
- Guidance on Integrating Climate Change Adaptation into Development Co-operation. OECD, 2009.
- Climate Change Science Compendium; UNEP (2009).
- Climate in Peril, a Popular Guide to the Latest IPCC Report; UNEP 2009.
- Mainstreaming Climate Change Adaptation into Development Planning: A Guide for Practitioners; UNEP & UNDP, 2011.

Project Work/Dissertation DM20404CR

Course Outcome: This is one of the important courses which provide a real time situation to the students to apply their theoretical and practical knowledge in indentifying a research problem relevant to disaster management theme, setting objectives and then employing various data generation/analysis techniques to complete a dissertation on a given topic. This course helps the students to work independently under the supervision of a teacher and complete a given task within a stipulated timeframe.

Credits: IV

The students will work on the dissertation in the logical framework given below in the relevant field of Disaster Management. The student would compile his/her thesis in consultation with the concerned Supervisor/Guide. The dissertation will subsequently be evaluated by External/ Internal Examiners. The distribution of marks is as under.

Thesis Framework

1. Statement of the Problem
2. Conceptual Framework
3. Objectives
4. Hypothesis/ Research Questions
5. Literature Survey
6. Methodology
7. Data Sources (Based on Primary Sources, Secondary Sources and Laboratory Work)
8. Results and Discussion
9. Conclusion
10. References

Evaluation Process:

I. The evaluation process shall have three components consisting marks distribution as given:

i. Dissertation	60
ii. External Viva Voce	20
iii. Internal	20

Note: The work should be original one and the department will check plagarism.

ENVIRONMENTAL IMPACT ASSESSMENT AND EMP DM20405DCE

Course Outcome: The EIA is very important and has to be undertaken early in the development of proposed projects, plans and programmes. Thus during the course students will be given information about the concept, approaches and legal provisions and notifications of EIA. The students will be also familiarised with the various methodologies applied while doing EIA process and some specific EIA case studies.

Credit-I

1. EIA: Concept and Significance
2. Evolution of EIA
3. EIA: Objectives and Approaches
4. EIA: Methods
5. EIA: Baseline Data Generation

Credit-II

1. Strategic Environmental Assessment/ Components of EIA
2. Ecological Assessment
3. Social Impact Assessment
4. Public Participation in Environmental Decision Making
5. EIA Report and its Contents

Credit-III

1. Concept of Disaster-Environment Matrix
2. Air quality assessment
3. Water quality assessment
4. 2006 EIA Notification & its Amendment in India
5. Land Acquisition Rehabilitation and Resettlement Act-2013

Credit-IV

EIA/EMP Case Studies

1. Hydropower Projects
2. Industrial Estate
3. Highways
4. Tourist Townships
5. Chemical Industries

Suggested Readings

- Introduction to Environmental Impact Assessment, 5th Ed; John Glasson and Riki Therivel, Routledge;
- Environmental Impact Assessment; Charles H. Eccleston, 2011.
- Introduction to Environmental Impact Assessment. John Glasson, Riki Therivel, and Andrew Chadwick, 2013.
- The International Law of Environmental Impact Assessment; Neil Craik, 2010,
- Environmental Impact Assessment; Alan Giplin, 1995.

CONFLICTS AND GEO-POLITICAL ISSUES IN DISASTER MANAGEMENT DM20406DCE

Course Outcome: This course is aimed at providing in-depth knowledge about the conflicts and geo-political issues that are related to disastermanagement. Besides the refugee crisis, the role and mandate of various global and regional organizations in Geo-political conflicts will also be dealt in the course.

Credit-I

1. Geopolitics and Conflicts - An Overview
2. Disaster-Conflict Interface
3. Conflicts- the mega Disasters
4. Trans-boundary Crisis and Management
5. Constraints to Management of trans-boundary disasters in South Asia

Credit-II

1. Shifting global power balance and its impact on conflict zones
2. Conflicts and their implications –Middle East, South Asia, Africa
3. Role of the UNHCR in Refugee Crisis
4. Role of UNICEF in Geo-political Conflicts
5. Role of the ICRC in Conflict Zones

Suggested Readings

- Introduction to Geopolitics; Colin Flint, 2012.
- Modern Geopolitics and Security: Strategies for Unwinnable; Amos N. Guiora, 2013.
- The New Geopolitics; Michael Don Ward, 1992.
- UNICEF www.unicef.org
- UNDRR www.undrr.org
- UNHCR - The UN Refugee Agency www.unhcr.org
- International Committee of the Red Cross www.icrc.org
- Disaster Risk Reduction in South Asia; Sahni P and Malalgoda M. PHI Learning Pvt. Ltd

DISASTERS AND PUBLIC HEALTH DM20407DCE

Course Outcome: Disasters not only cause loss to lives and property but also give rise to diseases and injuries. In this course the students will get thorough knowledge about disaster epidemiology, disaster site management, community health management, medical and health response to different disasters and role of IEC and technology in health management during disasters.

Credit-I

1. Introduction to Disasters and Public Health
2. Disaster Epidemiology: Tools and Methods
3. Disaster Site Management
4. Mass Casualty Management
5. Triage- Concept and Use

`

Credit-II

1. Medical Preparedness Plan
2. Medical and Health Response to Different Disasters
3. Community Health Management during Disasters
4. Psychological Rehabilitation
5. Role of IEC and Technology in Health Management during Disasters

Suggested Readings

- Pocket Emergency Medicine; Abdul Basit, https://medsyndicate.com/
- Emergency Medicine; D. Cass, I. Dubinsky and. M. Thompson.
- Emergency Medicne and First aid https://www.pdfdrive.com/emergency-medicine-e18778170.html
- Disaster Medicine; Gregory R. Ciottone, 2006.
- Handbook of health education and communication; Gupta A.K.
- Public health management principles and practice; Lal S.V., 2016.

DISASTER MANAGEMENT FOR CRITICAL INFRASTRUCTURE DM20408DCE

Course Outcome: This course will enable students to know about critical infrastructure, disaster vulnerability of basic critical infrastructure and safetymeasures for critical infrastructure like hospitals, schools, transport etc.

Credit- I

1. Critical Infrastructure: Nature and Concept
2. Classification of Critical Infrastructure
3. Complexity of Critical Infrastructure
4. Vulnerability of Critical Infrastructures
5. Exposure, Susceptibility and Coping Capacity of Critical Infrastructure

Credit-II

1. Resilient Critical Infrastructure
2. Critical Infrastructure Protection (CIP) Framework
3. Guidelines for Safety ofHospitals
4. Safety guidelines for Academic Institutes and Cultural Heritage Sites
5. Safety of Power and Water supply Installations, Road Networks

Suggested Readings

- Critical Infrastructure: Reliability and Vulnerability; Alan T. Murray and Tony Grubesic, 2007. Advances in Spatial Science. Springer Pub.
- Critical Infrastructure: Homeland Security and Emergency Preparedness; Robert S. Radvanovsky. Fourth Ed. 2018. CRC Press.
- Critical Infrastructures and Disaster Risk Reduction; Bach C., A.K. Gupta, S.S. Nair and J. Birkmann, 2013. National Institute of Disaster Management and Deutsche Gesellschaftfürinternationale Zusammenarbeit GmbH (GIZ), New Delhi.
- Critical Infrastructure https://www.nap.edu
- Hospital safety https://docs.google.com/forms.
- Safety and Disaster Management Methods, Techniques, Recent Approach, Major Events & Exist Framework Hazardous Material; O. P. Dutta.
- School Safety Initiatives by Geo-hazards Society; http://www.geohaz.in/.

SEARCH AND RESCUE OPERATIONS DM20004GE

Course Outcome: Disasters in densely populated areas/cities around the world have increased the need for sophisticated search and rescue capabilities to assist trappedvictims. The said course is thus aimed at enabling students to learn about various search and rescue strategies, search plans and search priorities which will help the students to know how to search and rescue during earthquakes, floods, snow avalanches, landslides and building fires/collapse.

Credit-I

1. Concept of Search and Rescue (SAR)
2. Search and Rescue Teams and Equipments
3. Operational Methods in SAR
4. Role of different Organizations/Agencies in SAR
5. Search and Rescue at Community Level

Credit-II

Search and Rescue with reference to:

1. Earthquakes
2. Floods
3. Snow Avalanches
4. Landsides
5. Building Fires

Suggested Readings

- Federal Emergency Management Agency National Urban Search and Rescue US&R Response System Field Operations Guide; 2013. Createspace Independent Pub.
- Basic Search & Rescue Skills Emergency Response International; www.eri-online.com
- Geo Hazards Society, Fire Safety; http://www.geohaz.in/
- Hydro Meteorological Hazards; www.nidm.gov.in
- Search and Rescue; https://en.wikipedia.org

COMMUNITY BASED DISASTER MANAGEMENT DM2004OE

Course Outcome: Community being the first respondent can look after the problems in context of local conditions and provide solutions within the existing circumstances. The course gives a detailed account of concept, components and principles of community based disaster management. It also highlights the role of local bodies in managing disasters in the community more effectively.

Credit- I

1. CBDM- Concept and Significance
2. Components of CBDM
3. Principles of CBDM
4. Characteristics of Safe and Resilient Community
5. Disaster Management and Community Planning

Credit- II

1. Community based Disaster Capacity and Skill Development Training Programme
2. Community Disaster Response Team
3. Role of Social Workers in CBDM
4. Role of Panchayti Raj Institutions and Village Disaster Management Committee
5. Gender Minority and Ethnic Dimensions in Disaster Management

Suggested Readings

- Community Based Disaster Risk Reduction; Rajib Shaw, 2012,
- Search and Rescue https://en.wikipedia.org
- Hyogo Framework for Action and Urban Disaster Resilience: 16 (Community, Environment and Disaster Risk Management); Yuki Matsuoka, Rajib Shaw, 2014, Emerald Publishing Limited
- Water Communities: 2 (Community, Environment and Disaster Risk Management); Rajib Shaw, Danai Thaitakoo, et al. 2010. Emerald Publishing Limited.
- Building Resilient Urban Communities: 15 (Community, Environment and Disaster Risk Management; Yuki Matsuoka, Jonas Joerin, Rajib Shaw, et al. 2014. Emerald Publishing Limited

//////////////////////