

## **PG DIPLOMA IN DISASTER MANGEMENT**

**Paper title: Foundation course in Disaster Management**

### **Paper-I**

#### **UNIT-I**

Disaster: definitions and key concepts; History of disaster management; Trends of disasters; Concept of climate change and sustainability; Theories of climate change; Impact of climate change; Disaster management and global sustainability

#### **UNIT-II**

Typology and classification of disasters; Natural disaster: floods, droughts, cyclones; Manmade disasters: war, conflict; industrial accidents; Environmental and societal impact of disasters

#### **UNIT-III**

Disaster management; approaches and models; Disaster management cycle; Vulnerability analysis; Risk analysis; Disaster risk reduction (DRR); Disaster management ethics; Integrated disaster management

#### **UNIT-IV**

Climate sustainability and disaster management; Climate change mitigation and adaptation; Role of remote sensing and GIS in climate change studies and disaster management; Concerns and prospects of disaster management; United Nations Office for Disaster Risk Reduction (UNDRR); Disaster Management Act, 2005

### **Suggested Readings:**

Rodríguez, H., Donner, W., Trainor, J. E., (Eds.). 2018. Handbook of Disaster Research, Second Edition, Springer, Gewerbestrasse Cham, Switzerland

Quarantelli, E. L. (Ed.). 1998. What is a disaster? Perspectives on the Question. London: Routledge

Bosher, L.; Chmutina, K., 2017. Disaster Risk Reduction for the Built Environment, Wiley Blackwell, West Sussex, UK

Coppola, D.P. 2015. Introduction to International Disaster Management, Butterworth-Heinemann, Oxford, UK

Bullock, J.B., Haddow, G.D., Haddow, K.S., Coppola, D.P. 2016. Living with Climate Change: How Communities Are Surviving and Thriving in a Changing Climate, CRC Press, Boca Raton, USA

## **Paper Title - Disaster Management Cycle, Laws and Policies,**

### **Paper-II**

#### **Unit-I**

Necessity and Scope of Disaster Management-Concepts, Definitions, Components and Terminologies in Disaster Management; Disaster Management Cycle; Disaster Risk Reduction (DRR), Disaster Management Cycle-Anti Disaster Response (Risk Assessment, Prevention and Mitigation, Early Warning Systems), During Disaster Response (Evacuation, Search and Rescue, Relief) and Post Disaster Response (PDNA, DALA, Reconstruction and Redevelopment)

#### **Unit-II**

Disaster Management Act of India,2005, Focus and Objectives of NDMA Guidelines on Disaster Management Plan, Disaster Management Policy, Principles, Essential components & Significance of disaster management policy, National Policy of India on Disaster Management(NPDM),Scope of Environmental Legislation and policy; National Action Plan on Climate Change, International Strategy for disaster reduction, Hyogo Framework of action, Environmental protection Act 1989,Coastal Disaster, Coastal Zone Regulation Notification, 1991, NDMA 2005

#### **Unit-III**

Disaster Risk Management in India: Emergence of Institutional Arrangement in India, Present Structure for Disaster Management in India- NDMA, NEC, SDMA, SEC, DDMA, National Civil Defense College(NCDC),Nagpur, National Fire Service College (NFSC),Nagpur; Role and Responsibilities of Police, Home Guards, Armed Forces, Panchayat, urban and local bodies in Disaster Management.

#### **Unit-IV**

Case Studies:

- National- Disaster Management Policy in India,  
National ActionPlanonClimateChange.
- International- Disaster Management Policy in Indonesia,  
Sendai Framework for DRR (2015-30),

#### **Suggested Readings:**

1. Disaster management in In Carter, W. Nick, 1991: Disaster Management, Asian Development Bank, Manila
2. Natural Hazards by Bryant, E., Cambridge University Press. London, 1985.
3. Landslide Disaster – Assessment and Monitoring Nagarajan, R., Anmol Publications, New Delhi, 2001.
4. Environmental risks and hazards by Cutter, Susan L., Prentice Hall of India, New Delhi.1999.
5. Bill McJuire, Ian Mason and C. Killburn (2002) Natural hazards and Environmental change, Oxford University Press, New York.

## **Paper Title - Fundamentals and Scientific Background to Hazardous Process**

### **Paper-III**

#### **UNIT-I Geologic Hazard Processes**

Understanding the concepts of Plate tectonics, plate boundaries, seismicity and tsunami, locating earthquake, magnitude, intensity, liquefaction; Volcanic processes and climate change; Landslide processes and mass movements: gravity induced mass movement, falls, slide, flows; submarine mass movements, subsidence.

#### **UNIT-II Floods**

Geomorphology of channels and flood plains, hydrographs, flood frequency curves, geology and flooding of large rivers system: The Indus, Ganges, Brahmaputra, and Yamuna; Cyclones: origin, monitoring, warning, associated hazards, tsunami vs waves, related atmospheric processes.

#### **UNIT-III Climate Change Processes**

Scientific basis of Climate change, review of latest findings of IPCC, green house effect, green house gases, El-Nino, la-Nina, sea level changes, glacial advances and retreat, international protocols, severe weather processes related to drought, rainfall, heat waves, cold waves, thunder storms, flash flooding, lightning.

#### **UNIT-IV**

Concept of Cartography, maps, scales, shift of map making from traditional to digital; sources of information and data collection, location and analysis tools; remote sensing, GPS, and GIS; digital cartography, basic statistics, data processing: computation and tabulation

## **Paper Title: Geoinformatics in Disaster Management**

### **Paper-IV**

#### **Unit-1**

Meaning and Scope of Geoinformatics: Understanding of Maps; Scale; Projection. and coordinate system

#### **Unit-II Fundamentals of remote Sensing**

Definition, types scope and principles of remote sensing; Stages in remote sensing data acquisition; Electromagnetic radiation and electromagnetic spectrum; Interaction of EMR with atmosphere and Earth's surface features, Remote sensing platforms and orbits, Image interpretation

#### **Unit-III Fundamentals of GIS**

History and development of GIS; Cartography –GIS interface; Recent trends and applications of GIS; Spatial and non Spatial data, Data Structures: Relational, hierarchical and network; Query in GIS, Spatial Analysis, DEM, Map Designing

#### **Unit-IV GPS Basics**

Global Positioning System: Introduction, Satellite constellation, GPS signals and data, Geopositioning-Basic Concepts. NAVSTAR, GLONASS, Indian Regional Navigational Satellite System (IRNSS), GAGAN Control Segment, Space Segments, User Segment, GPS Positioning Types- Absolute Positioning, Differential positioning , GPS Surveying Methods and Accuracy, Application of GPS

#### **Suggested Readings:**

- 1) Jensen John R. Introduction to Digital Image Processing: A Remote Sensing Perspective Prentice hall, New Jersey
- 2) Richards John A& Xiuping Xia, 2006. Remote Sensing Digital Image Analysis: An Introduction. Birkhäuser.
- 3) Lillesand Thomas M. & Kiefer Ralph: Remote Sensing Image Interpretation John Wiley and Sons, New York
- 4) Campbell John B. Introduction to Remote Sensing, Taylor & Francis, London
- 5) Sabins Floyd. F: Remote Sensing and Principles of Image Interpretation, W H Freeman, New York
  - 6) Burrough, P.A., 1986, Geographical Information System for land Resources System, Oxford Univ. Press, UK.
  - 7) Fotheringham, S.; Rogerson, P. (ed.), 1994. Spatial analysis and GIS. Taylor and Francis, London, UK.
  - 8) Laurini, Robert and Dierk Thompson, 1992, Fundamentals of Spatial Information Systems, Academic Press, ISBN 0-12-438380-7.
  - 9) Maguire,D.J.; Goodchild, M.F.; Rhind,D.W. 1991.Geographical information System, Longman, London,UK
  - 10) Siddiqui, M.A.; 2006, Introduction to Geographical Information System, Sharda Pustak Bhavan, Allahabad.
  - 11) Siddiqui, M.A.; 2011, Concepts and Techniques of Geoinformatics, Sharda Pustak Bhavan, Allahabad.
  - 12) Devillers, R. and Jeansoulin (2006). Fundamentals of Spatial Data Quality. ISTE Ltd, United States.
  - 13) Draper, N. and Smith, H. (1981). Applied Regression Analysis. Wiley, New York.
  - 14) Hengl, H. (2007). A Practical Guide to Geostatistical Mapping of Environmental Variables. European Commission, Italy.
  - 15) Sen, Z. (2009). Spatial Modeling Principles in Earth Sciences. Springer.