

**PANJAB UNIVERSITY CHANDIGARH**  
**(Esttd. under the Panjab University Act VII of 1947-enacted by**  
**the Govt. of India)**

**FACULTY OF ARTS**

***SYLLABI***

***FOR***

**DISASTER MANAGEMENT**  
**(ADD-ON COURSE)**  
**CERTIFICATE, DIPLOMA AND ADVANCED DIPLOMA**  
**EXAMINATIONS 2019**

# PANJAB UNIVERSITY, CHANDIGARH

Outlines of tests, syllabi and courses of reading for Certificate, Diploma Course & Advanced Diploma in Disaster Management (Add on Course) for the examinations of 2019.

## CERTIFICATE COURSE

### Course Structure

Course Code	Title of the Paper	Max. Marks
CCDM I	Fundamentals of Disaster Management Theory : 60 Practical : 30 Internal Assessment: 10	100
CCDM II	Disasters in India Theory : 60 Practical : 30 Internal Assessment: 10	100

### CCDM I: Fundamentals of Disaster Management

Maximum Marks	: 100
Theory	: 60
Practical	: 30
Internal Assessment	: 10
Time	: 3hrs.

#### Objectives:

To introduce the students to the basic concepts and various types of disasters and educate them on basic disaster management strategies.

#### Unit-I

- Definition and Concept of Hazard, Risk, Vulnerability and Disaster
- Types and classification of Disasters

#### Unit-II

- Nature Induced Disasters:  
Earthquakes, Floods Cyclones and Cloud burst.  
Avalanches, Forest Fire and Tsunami.

#### Unit-III

- Human Induced Disasters:  
Nuclear, Chemical and Industrial Disasters  
Global warming; Biological Disasters; Epidemics

#### Unit-IV

- Disaster Management: Meaning, Concepts, Approaches, Principles, Objectives and Scope
- Essentials of Disaster Management; Institutional and Individual's responsibilities during risk reduction, preparedness, response and recovery phases

**Pedagogy:** Focus should be on observation, assessment and careful analysis of hazard prone areas to comprehend their vulnerability to disasters.

**Note:**

1. There shall be one compulsory question containing 15 short type questions covering the whole syllabus. The student shall attempt any ten parts in about 25-30 words each. Each part shall carry 2 marks (Total 20 marks).
2. The whole syllabus shall be divided into 4 units. Eight questions will be set from the whole syllabus, two from each unit. The student will be required to attempt one question from each unit. Each question will carry 10 marks (Total 40 marks). This will be in addition to the compulsory question.

**Practical:**

1. A visit to a school for vulnerability assessment.
2. A visit to any Government Hospital to know their disaster management plan
3. A visit to one slum area in the City to assess and analyze risk.

**Note:**

1. Based on these visits, students should prepare a report containing the vulnerability assessment of a village, disaster management plan of a hospital and risks of disasters in a slum.
2. The report should be submitted two weeks before the exam. The report will be evaluated by a Board of Examiners consisting of the teacher teaching the course and one faculty member from the allied discipline.

**List of Readings:**

**Essential Readings:**

1. B.K. Khanna: *Disasters: All You Wanted to Know About*, New India Publishing Agency, New Delhi, 2005.
2. Bryant Edwards: *Natural Hazards*, Cambridge University Press, U.K, 2005.
3. Chakraborty, S.C.: *Natural Hazards and Disaster Management*, Pragatishil Prokashak, Kolkata, 2007.
4. Hyndman, D. and D. Hyndman: *Natural Hazards and Disasters*. 2<sup>nd</sup> edition. USA, Belmont: Brooks/Cole, 2009.
5. Coppola, D.P.: *Introduction to International Disaster Management*, 3<sup>rd</sup> Edition. UK, Butterworth-Heinemann/Elsevier, 2015.

**Further Readings:**

1. Sahni, Pardeep et.al. (eds.) : *Disaster Mitigation Experiences and Reflections*, Prentice Hall of India, New Delhi. 2002
2. Kapur, A.: *Disasters in India: Studies of Grim Reality*, Rawat Publications, Jaipur; 2005

## CCDM II: Disasters in India

Maximum Marks: 100

Theory Paper: 60

Practical: 30

Internal Assessment: 10

Time Allowed: 3 Hours

**Objectives:** To sensitize the students regarding the disaster profile of India portraying regional dimensions.

### Unit-I

- Regional Profile of India based on Earthquakes and Landslides.

### Unit-II

- Regional Profile of India based on Droughts, Floods and Cyclones.

### Unit-III

- Case Studies: Bhopal Gas Tragedy, 1984 and Orissa Super Cyclone, 1999.

### Unit-IV

- Case Studies: Kashmir Earthquake, 2005 and Kedarnath Floods, 2013.

**Pedagogy:** The students shall be explained the spatio-temporal and regional dimensions of disasters in India. The focus will be on reconstructing disaster profile based on case studies. Extensive use of audio visual aids will be made. Field trips may be arranged, if feasible.

### Note:

1. There shall be one compulsory question containing 15 short type questions covering the whole syllabus. The student shall attempt any ten parts in about 25-30 words each. Each part shall carry 2 marks (Total 20 marks).
2. The whole syllabus shall be divided into 4 units. Eight questions will be set from the whole syllabus, two from each unit. The student will be required to attempt one question from each unit. Each question will carry 10 marks (Total 40 marks). This will be in addition to the compulsory question.

### Practical:

A field visit of the students will be organized by the College to some nearby site of any recent disaster/ event or ecological destruction or reconstruction and each student would prepare a Field Report based on his/her experiences.

**Note:** The Field Work based report of 25-30 pages prepared by the students will be submitted two weeks before the theory examination. This will be evaluated by a Board of Examiners consisting of the teacher teaching the course and one faculty member from the allied discipline.

**Essential Readings:**

1. Kapur, A.: *Disasters in India: Studies of Grim Reality*, Rawat Publications, Jaipur; 2005.
2. Kapur, Anu: *Vulnerable India: A Geographical Study of Disasters*, Sage Publications India Pvt. Ltd, New Delhi, 2010.
3. Paraswamam, S. and Umikrishnan, P.V., *India Disaster Report*, Oxford University Press, New Delhi, 2000.

**Further Readings:**

1. Reddy, K.R and Others eds.: *Natural Hazards and Disasters*, Department of Geography, Sri Krishnadeveraya University, Anantapur, A.P., India, 2009.
2. Sharma, V.K. ed. (1994): *Disaster Management, Indian Institute of Public Administration*, New Delhi, 1994.
3. Gupta, M.C., L.C. Gupta, B.K. Tamini and Vinod K. Sharma: *Manual on Natural Disaster Management in India*, National Disaster Management Centre, New Delhi, 2000.

## DIPLOMA COURSE

### Course Structure:

Course Code	Title of the Paper	Max. Marks
DCDM I	Remote Sensing in Disaster Management Theory : 60 Practical : 30 Internal Assessment: 10	100
DCDM II	GIS in Disaster Management Theory : 60 Practical : 30 Internal Assessment: 10	100

### DCDM-I: Remote Sensing in Disaster Management

Maximum Marks: 100

Theory Paper: 60

Practical: 30

Internal Assessment: 10

Time: 3 hrs.

### Objectives:

To introduce the students to the applications of Earth Observation Technology and geoinformatics in disaster management.

#### Unit - I

- **Basics of Remote Sensing:**  
Introduction, Definition, Nature, Development, and Limitations  
Role of Remote Sensing in Disaster Management

#### Unit - II

- **Basics of GPS:**  
Concept, Definition, Elements and Segments of GPS  
The Application of GPS for Disaster Management

#### Unit - III

- **Remote Sensing Applications in Natural Disasters:**  
Earthquakes  
Land Slides  
Floods

#### Unit - IV

- **Remote Sensing Applications in Human Induced Disasters:**  
Fire  
Nuclear  
Chemical

**Pedagogy:** The students shall be explained the fundamentals of Remote Sensing and GPS through audio-visual aid, class discussion, presentations and practical demonstration. These fundamentals will form the basis of disaster analysis, monitoring and assessment.

**Note:**

1. There shall be one compulsory question containing 15 short type questions covering the whole syllabus. The student shall attempt any ten parts in about 25-30 words each. Each part shall carry 2 marks (Total 20 marks).
2. The whole syllabus shall be divided into 4 units. Eight questions will be set from the whole syllabus, two from each unit. The student will be required to attempt FOUR questions selecting one from each unit. Each question will carry 10 marks (Total 40 marks). This will be in addition to the compulsory question.

**Practical:** Introduction to Satellite Imageries, their characteristics and interpretation. The focus of practical exercise will be to understand the use of remote sensing and satellite imageries in the analysis of disasters. Students shall also undertake field Trips: visit the sites of previous or current disaster as well as agencies dealing with disasters or disaster prone areas/districts in various ways.

**Note:**

1. Students shall prepare a report based on field visits. Students shall also prepare a report on application and use of remote sensing in any one disaster listed in Unit-III & IV.
2. The report should be submitted two weeks before the exam. The report will be evaluated by a Board of Examiners consisting of the teacher teaching the course and one faculty member from the allied discipline

**List of Readings:**

**Essential Readings:**

1. R.B. Singh: *Natural Hazards and Disaster Management*, Rawat Publications Jaipur, 2009.
2. A.M. Chandra and S.K. Ghosh : *Remote Sensing and Geographical Information System*, Narosa Publishing House, New Delhi, 2006.
3. Victor Mesev: *Integration of GIS and Remote Sensing*, John Wiley and Sons Ltd. 2007.
4. Thomas M. Lillesand, Ralph W. Kiefer, Jonathan W. Chipman: *Remote Sensing and Image Interpretation*, Wiley India Pvt. Ltd. New Delhi.-2003.
5. Robert A. Schowengerdt : *Remote Sensing-Models and Methods for image Processing*, Academic Press- California U.S.A.-2006.
6. Roy, P.S.; Van Westen, C.J.; Jha, V.K.; Lakhera, R.C. and Champati Ray, P.K., *Natural Disaster and their Mitigation: Remote Sensing and Geographical Information System Perspectives*, IIRS, Dehra Dun, Govt. of India, 2000.

**Further Readings:**

1. Shailesh Nayak, Siyka Zlatanova: *Remote sensing and GIS technologies for monitoring and prediction of disasters* Springer, 2008.

2. Nirupama, Slobodan P. Simonovic: *Role of Remote Sensing in Disaster Management*, University of Western Ontario. Dept. of Civil and Environmental Engineering, 2002.
3. Giles M. Foody, Timothy A. Warner, M. Duane Nellis: *The SAGE handbook of remote sensing*, SAGE Publications Ltd. 2009.
4. Jonathan Li, Sisi Zlatanova, Andrea G. Fabbri: *Geomatics Solutions for Disaster Management*, Springer, 2007.

## DCDM-II: GIS IN DISASTER MANAGEMENT

Maximum Marks: 100  
 Theory Paper: 60  
 Practical: 30  
 Internal Assessment: 10  
 Time: 3 hours

**Objectives:** To introduce the students about the basic concepts and application of GIS in Disaster Management.

### Unit - I

- **Basics of GIS:**  
 Introduction, Definition, Concept and Significance of GIS  
 Components of GIS  
 Spatial Data and Data Models

### Unit - II

- **Role of GIS in Pre-Disaster Management:**  
 GIS in Disaster Mitigation and Preparedness  
 Hazard Analysis and Mapping  
 Risk & Vulnerability Analysis

### Unit - III

- **Role of GIS in Post-Disaster Management:**  
 Warning and Evacuation  
 Rescue and Relief  
 Rehabilitation and Reconstruction

### Unit - IV

- **Application of GIS in Disaster Management**  
 Landslide assessment and management  
 Earthquake assessment and management  
 Flood assessment and management

**Pedagogy:** Students shall be exposed to the applied aspect of geospatial technology with specific reference to utility of GIS technology in disaster management.

### Note:

1. There shall be one compulsory question containing 15 short type questions covering the whole syllabus. The student shall attempt any ten parts in about 25-30 words each. Each part shall carry 2 marks (Total 20 marks).



2. The whole syllabus shall be divided into 4 units. Eight questions will be set from the whole syllabus, two from each unit. The student will be required to attempt FOUR questions selecting one from each unit. Each question will carry 10 marks (Total 40 marks). This will be in addition to the compulsory question.

**Practical:** Introduction to GIS software, its functioning, database creation and analysis. The focus of practical exercise will be to understand the use of GIS in the analysis of disasters

**Note:** Students shall prepare a report on creation of database and mapping of any one disaster using GIS listed in Unit-IV. The report should be submitted two weeks before the exam. The report will be evaluated by a Board of Examiners consisting of the teacher teaching the course and one faculty member from the allied discipline

### **List of Readings**

#### **Essential Readings:-**

1. Kang Tsung Chang : *Introduction to Geographic Information Systems*, Tata McGraw-Hill, Publishing Company Ltd.- New Delhi.2006.
2. Mather, P.M.: *Computer Processing of Remotely-Sensed Images: An Introduction*, Third Edition, John Wiley & Sons. 2008
3. Roy, P.S.; Van Westen, C.J.; Jha, V.K.; Lakhera, R.C. and Champati Ray, P.K.: *Natural Disaster and their Mitigation: Remote Sensing and Geographical Information System Perspectives*, IIRS, Dehra Dun, Govt. of India. 2000.
4. Srivastava, G.S: *An Introduction to Geoinformatics*, McGraw Hill Education (India) Private Limited, New Delhi. 2014
5. Tomaszewski, Brian: *Geographic Information Systems (GIS) for Disaster Management*, Taylor & Francis, New York. 2015

#### **Further Readings:**

1. Nag, P. and M. Kudrat: *Digital Remote Sensing*, Concept Publishing Company, New Delhi. 1998
2. Gomarasca, Mario A: *Basics of Geomatics*, Springer: Heidelberg, 2009.

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## ADVANCED DIPLOMA

Course Code	Title of the Paper	Max Marks
ADCDM-V	Disaster Management Framework in India Theory Paper : 90 Internal Assessment: 10	100
ADCDM-VI	Project Report Based on Field Work Project Report: 60 Viva Voce: 30 Internal Assessment: 10	100

Outlines of tests, syllabi and courses of reading for Certificate Course & Advance Diploma in Disaster Management (Add on Course) for the examinations of 2018, 2019 & 2020.

### ADCDM-V: Disaster Management Framework in India

Maximum Marks : 100  
Theory Paper : 90  
Internal Assessment: 10  
Time Allowed : 3 Hours

**Objectives:** Main objectives of this course are to familiarize the students with the foundations, recent trends and Governmental and Non-Governmental practices for disaster management in India.

#### Unit-I

- Disaster Management Framework in India before DM Act 2005
- Disaster Management Framework in India after DM Act 2005

#### Unit-II

- National Level Nodal Agencies
- National Disaster Management Authority

#### Unit-III

- State Authorities
- District Authorities
- Local level authorities

#### Unit-IV

- Role of NGOs, Corporate Sector, Army and Police, and Educational Institutions in Disaster Management

**Pedagogy:** The students shall be explained the foundations, recent trends and Governmental practices for disaster management in India.

**Note:**

1. There shall be one compulsory question containing 15 short type questions covering the whole syllabus. The student shall attempt any ten parts in about 25-30 words each. Each part shall carry 2 marks (Total 20 marks).
2. The whole syllabus shall be divided into 4 units. Eight questions will be set from the whole syllabus, two from each unit. The student will be required to attempt one question from each unit. Each question will carry 17.5 marks (Total 70 marks). This will be in addition to the compulsory question.

**Essential Reading:**

1. Ahmad, A. (2010): Disaster Management: Through the New Millennium, Anmol Publications, New Delhi.
2. Anandha Kumar, K.J., Walia, A. & Chaturvedi, S., (2012): India Disaster Report 2011, <http://nidm.gov.in/PDF/India%20Disaster%20Report%202011.pdf>
3. Collins, L.R., (2002): Disaster Management and Preparedness, Library of Congress, United States of America.
4. Disaster Management Act (2005). <http://www.ndmindia.nic.in/actsrules/DisasterManagementAct2005.pdf>
5. Dr. Satendra, (2003): Disaster Management in the Hills, Concept Publishing House, New Delhi.
6. Goel, S.L., (2006): Encyclopedia of Disaster Management, Deep and Deep Publications, New Delhi.
7. Gosh, G.K., (2012): Disaster Management, A.P.H. Publishing Corporation, New Delhi
8. Government of India, (2004): Disaster Management in India -A Status Report, <http://ndmindia.nic.in/EQProjects/Disaster%20Management%20in%20India%20-%20A%20Status%20Report%20-%20August%202004.pdf>
9. Government of India, (2005): Disaster Management in India, <http://www.unisdr.org/2005/mdgs-drr/national-reports/India-report.pdf>
10. Gupta, H.K., (2003): Disaster Management, Universities Press (India) Private Limited, Hyderabad.

**Further Reading:**

11. Hewitt, K. (1997). Regions of Risk: A Geographical Introduction to Disasters, Longman, London.
12. International Federation of Red Cross and Red Crescent Societies, (2012): World Disasters Report, 2012 – Focus on Forced Migration and Displacement, <http://www.ifremedia.org/assets/pages/wdr2012/resources/1216800-WDR-2012-ENFULL.pdf>
13. Kapur, A. (2005). Disasters in India: Studies of Grim Reality, Rawat Publications, Jaipur; 2005.

14. Kasperson, J.X., Kasperson, R.E. and Turner, B. L. (1995). Regions at Risk: Comparisons of Threatened Environments, United Nation, University Press, Tokyo.
15. Ministry of Home Affairs, Government of India, (2011): Disaster Management in India, <http://nidm.gov.in/PDF/DM%20in%20India.pdf>
16. NDMA (2009): National policy on Disaster Management, [http://nidm.gov.in/PDF/policies/ndm\\_policy2009.pdf](http://nidm.gov.in/PDF/policies/ndm_policy2009.pdf)
17. Paraswamam, S. and Umikrishnan, P.V. (2000). India Disaster Report, Oxford University Press, New Delhi.
18. Shastri, K.N. (2012): Disaster Management in India, Pinnacle Technology.
19. Singh, R.B., (2000): Disaster Management, Rawat Publications, Jaipur.
20. Also included are all the books, guidelines and manuals available on the website of NIDM, <http://nidm.gov.in/>

### **ADCDM-VI: Project Report Based on Field Work**

Maximum Marks: 100  
Project Report: 60  
Viva Voce: 30  
Internal Assessment: 10

- Paper ADCDM-II will be based on Project Report
- Each student will be required to prepare a project work of 40-50 typed pages and submit it at least one week before the commencement of the annual Practical Examinations.
- The Project Report will be evaluated by an internal as well as external examiner.

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