

**MASTER OF SCIENCE (DISASTER MANAGEMENT)**  
**CENTRE FOR DISASTER MANAGEMENT**  
**MIZORAM UNIVERSITY**

**COURSE STRUCTURE FOR TWO YEARS PG/ MASTER DEGREE PROGRAMME**

	<b>Course Code</b>	<b>Course Name</b>	<b>Total Credit</b>	<b>Mark</b>
<b>FIRST SEMESTER</b>	CDM/MJ/500	Introduction to Disaster & Hazards	3	100
	CDM/MJ/501	Risk & Crisis Management	3	100
	CDM/MJ/502	Environmental Geography	3	100
	CDM/MJ/503	Geography of India	3	100
	CDM/MN/504	Disaster Management	2	100
	CDM/MN/505	Environmental Studies	2	100
	CDM/FP/506	<i>Urban based field project</i>	4	100
	DMj=9; IMj= 3; DMn=2; IMn=2; FP= 4			<b>20</b>
<b>SECOND SEMESTER</b>	CDM/MJ/550	Research Methodology	3	100
	CDM/MJ/551	Geomorphology	3	100
	CDM/MJ/552	Applied Climatology	3	100
	CDM/MJ/553	Hydrology	3	100
	CDM/MN/554	Geophysical & Climatic Hazards	2	100
	CDM/MN/555	Geoinformatics in Disaster and Climate Studies	2	100
	CDM/FP/556	CSST related Field Project	4	100
	DMj=9; IMj= 3; DMn=2; IMn=2; FP= 4			<b>20</b>
<i>Exit option with PG Diploma with the completion of courses equivalent to 40 credits</i>				
<b>THIRD SEMESTER</b>	CDM/MJ/600	Disaster Risk Reduction & Planning	3	100
	CDM/MJ/601	Remote Sensing & GIS	3	100
	CDM/MN/602	Management of Man-made disasters and Security threats	2	100
	CDM/MN/603	Geography of Mizoram	2	100
	CDM/FP/604	Rural based Field Project	4	100
	CDM/DISS/649	<i>Dissertation</i>	6	100
	DMj=6; DMn=2; IMn= 2; FP= 4; DIS= 6			<b>20</b>
<b>FOURTH SEMESTER</b>	CDM/MJ/650	Natural Hazards Management	4	100
	CDM/INTS/651	<i>Internship</i>	4	100
	CDM/DISS/699	<i>Dissertation</i>	12	100
	DMj=3; Ints= 5; DIS= 12			<b>20</b>
<b>GRAND TOTAL</b>	DMj=28; IMj= 6; DMn=6; IMn=6; FP= 12; Ints= 4; DIS= 18		<b>80</b>	<b>2300</b>

DMj= Disciplinary Major    IMj= Inter- Disciplinary Major    DMn= Disciplinary Minor  
 IMn= Inter- Disciplinary Minor    FP/Ints/Apts= Field Project/ Internship/ Apprenticeship

## THIRD SEMESTER

### CDM/MJ/600: DISASTER RISK REDUCTION & PLANNING

Credits: 3

Marks: 20+20+60= 100

Duration: 3Hrs/ Week

**Objectives:** To train students to develop a sound and systematic approach to identify, evaluate and minimise disaster risk. It also intends to train students to conduct community based disaster risk reduction and management practices in order to prepare society to deal with disasters and reduce socio-economic risks and vulnerabilities.

*The end semester question paper shall have 6 questions (two questions from each unit) and the students shall be required to attempt four questions selecting at least one question from each unit*

#### **Course content:**

#### **UNIT – I**

1. Disaster Risk Reduction (DRR)- Concept and Relevance
2. DRR Activities and Initiatives; Disaster Risk Management (DRM)
3. Community Based Disaster Risk Management (CBDRM)- Concept, objectives, approaches

#### **UNIT – II**

4. Public Preparedness and Management for Risk Reduction
5. Planning for Mock Drills, Training and Workshops for Risk Reduction
6. Planning for School and Hospital Safety, Crowd Management

#### **UNIT- III**

7. Media in Public Preparedness, Awareness and Risk Reduction
8. Role of NGOs and Corporate Sector in Disaster Risk Management
9. Gender-Sensitive Disaster Risk Reduction

#### **Suggested readings:**

- 1) Abarquez I., Murshed Z. (2004). Field Practitioners' Handbook-Community-based Disaster Risk Management, Asian Disaster Preparedness Centre, Bangkok, Thailand.
- 3) Coppola D.P. (2015). Introduction to International Disaster Management, Elsevier.
- 4) Kelman, I., Mercer, J. and Gillard, J C. (2017). The Routledge Handbook of Hazards and Disaster Risk Reduction Including Climate Change Adaptation, Routledge.
- 5) Madu, Christian N and Chuhua Kuei (2018). Handbook of Disaster Risk Reduction and Management. World Scientific Publishing, Singapore.
- 6) UNDP. Reducing disaster risk: a challenge for development. [www.undp.org/cpr/disred/documents/publications/rdr/english/rdr\\_english.pdf](http://www.undp.org/cpr/disred/documents/publications/rdr/english/rdr_english.pdf)
- 7) UNISDR (2009) Terminology on disaster risk reduction. (online information on various terms used is available at [www.unisdr.org/eng/terminology/UNISDR-terminology-2009-eng.pdf](http://www.unisdr.org/eng/terminology/UNISDR-terminology-2009-eng.pdf))
- 8) White, P., Pelling, M., Sen, K., Seddon, D., Russell, S., & Few, R..(2005). Disaster risk reduction: a development concern. London: DFID.

**CDM/MJ/601: REMOTE SENSING & GEOGRAPHIC INFORMATION SYSTEMS  
(THEORY & PRACTICAL)**

**Credits: 3**

**Marks:20+20+60=100**

**Duration: 3Hrs/ Week**

**Objectives:** To introduce to the students both basic principles of aerial photo and satellite imagery interpretation and Geographical Information Systems (GIS) as well as to train them in visual and digital interpretation of satellite imagery and better understanding of the geographical realities by using modern tools of data acquisition, analysis and communication as a support system for rational decision making.

*The question paper shall have eight questions (four questions from each unit) and the students shall be required to attempt four questions selecting two questions from each unit.*

**Course Contents:**

**PART-A (Theory)**

**Marks = 60**

**UNIT – I**

1. Use of Aerial Photographs in Geographical Studies
2. Types of Aerial Photographs and Stereoscopes
3. Principal Point, Conjugate Principal Point, Photo-base, Flight Line and Stereoscopic overlap
4. Stereoscopy and Relief Displacement
5. Determination of Photo Scale and Area Measurement
6. Photo Indexing
7. Uses of Parallax Bar (stereo-meter), Stereoscopic Parallax Measurement and Determination of Height of Objects
8. Interpretation of Aerial Photographs using elements of Photo Interpretation in Different Branches of Geography

**UNIT – II**

9. Relevance of Remote Sensing Technology in Geographical Studies
10. Basic Concepts, Physical Basis, Satellite Orbits, Atmospheric Effects, Platforms and Sensors
11. Spatial, Spectral, Radiometric and Temporal resolutions
12. Maps, Air Photos and Satellite Imageries
13. Indian and Foreign Remote Sensing Satellites - LANDSAT, SPOT, IRS and IKONOS
14. Visual Interpretation of Satellite Imagery for Mapping Drainage Network, Land use /Land Cover, Geomorphic Features and Urban Sprawl
15. GIS-Introduction to Basic Concepts and Components
16. GIS and Cartography
17. CDMraphic Data : Spatial and Non-Spatial
18. Data Modeling : Raster, Vector and Hybrid
19. Database Structures
20. Data Input and Data Conversion
21. Concept of Co-ordinate System
22. GIS as a Decision Support System

## CDM/MJ/601: REMOTE SENSING & GEOGRAPHIC INFORMATION SYSTEMS

### PART-B (Practical)

Marks: 40

### UNIT – III

**Course Contents:** The question paper shall have four questions and the students shall be required to attempt 2 questions.

*The practical examination will consist of two parts*

- A. Cartographic and Laboratory Work : 30 Marks  
B. Practical Record and Viva-voce : 5+5 = 10 Marks

1. Marking Fiducial Marks, Fiducial Axes, Stereoscopic Overlap, Effective Area, Principal Points, Conjugate Principal Points, Photo Base and Flight Line for a Series of Aerial Photographs.
2. Calculation of Photo Scale and Area Measurement
3. Identification of Point, Linear and Areal Features on Aerial Photographs
4. Determination of Height of Objects and Relative Heights of Series of Points Marked Over a Photograph
5. Reading of Scale, Extent FCC and Other Marginal Information Pertaining to Satellite Imagery
6. Identification of Linear and Areal Features on Satellite Imagery
7. Preparation of Thematic Maps Showing Drainage Network, Land use/Land cover and Salient Geomorphic Features by Visual Interpretation of Satellite Imagery
8. Scanning and Digitization of Maps and Putting Data into Computer in Proper Formats
9. Graphical Representation of Spatial Data Over a Map Using GIS Software
10. Updating of Maps Using Aerial Photos and Satellite Imagery
11. Generation of GIS Database for an Area of Mizoram

### Suggested Readings:

1. Barrett, E.C. and Curtis, L.F. (1992): Fundamentals of Remote Sensing and AirPhoto Interpretation, McMillan, New York.
2. Burrough, P.A. (1986): Principles of CDMraphic Information Systems, OUP, Oxford.
3. Campbell, J.B. (2002): Introduction to Remote Sensing, Guilford Press, New York.
4. Chang, Kang-tsung, (2002): Introduction to CDMraphic Information Systems, Tata-McGraw-Hill, New Delhi.
5. Curran, P.J. (1985): Principles of Remote Sensing, Longman, London.
6. Deekshatulu, B.L. & Rajan, Y.S. (1984) : Remote Sensing, Indian Academy of Science, Bangalore.
7. DeMers, M.N. (2000) : Fundamentals of CDMraphic Information Systems, John Wiley, New York.
8. Floyd F. Sabins, (1986): Remote Sensing : Principles and Interpretation, Freeman, New York.
9. Leuder, D.R. (1959) : Aerial Photographic Interpretation : Principles and Applications, McGraw Hill, New York.
10. Lillesand, T.M. & Kiefer, R.W. (1987) : Remote Sensing & Image Interpretation, John Wiley, New York.
11. Longley, P.A. (2001): CDMraphic Information Systems : Principles. Techniques, Applications and Management, John Wiley, New York.

## CDM/MN/602: MANAGEMENT OF MAN-MADE DISASTERS AND SECURITY THREATS

Credits: 2

Marks:20+20+60= 100

Duration: 2Hrs/ Week

**Objectives:** This unit focuses on the nature and types of man-made (human instigated) hazards, including those on land and sea. The unit also investigates disaster management response to emerging security threats like cyber-attacks and terrorism.

*The end semester question paper shall contain 6 questions (3 questions from each unit) and the students shall be required to answer 2 questions from each unit*

### Course content:

#### UNIT – I

1. Impacts of anthropogenic activities such as rapid urbanization, injudicious ground water extraction; sand mining from river bank, deforestation, mangroves destruction.
2. Role of construction along river banks in elevating flood hazard; disturbing flood plains. deforestation and landslide hazards associated with it; nature and impact of wildfires.

#### UNIT – II

3. Large scale developmental projects- dams and nuclear reactors in hazard prone zones. Case studies of Bhopal, Minamata and Chernobyl disaster, recent.
4. Civil unrest, Workplace Violence- Characteristics, Causes, Case study; Cyber Security threats, Cyberwarfare, Cyber-attack; Crowd disaster; Terrorism attack- Left- Wing Extremism, Case study from India and recent.

#### **Suggested readings:-**

- 1) Anand Shinde (2021): Introduction to Cyber Security- Guide to the World of Cyber Security, Notion Press
- 2) Coppola, D.P. (2015). Introduction to International Disaster Management. Butterworth-Heinemann, Oxford, UK.
- 3) Cutter, S.L. 2012. Hazards Vulnerability and Environmental Justice. EarthScan, Routledge Press
- 4) Nina Godbole & Sunit Belapure (2011): Cyber Security, Wiley.
- 5) S. Vaidyanathan (2020): An introduction to Disaster Management- Natural Disasters and Man-made hazards, CBS.
- 6) Siddhartha Gautam & K Leelakrishna Rao (2012): Man Made Disasters Prevention and Management, Vista International Pub House

## CDM/MN/603: GEOGRAPHY OF MIZORAM

**Credits: 2**

**Marks:20+20+60=100**

**Duration: 2 Hrs/ Week**

**Objectives:** To impart knowledge about the salient features of the regional CDMraphy, habit, economy and identity of the tribal state of Mizoram. To help the student in analyzing the resource bases, cultural transformation and to enable them to present a systematic analysis of the region's characteristics.

*The end semester question paper shall contain 6 questions (3 questions from each unit) and the students shall be required to answer 2 questions from each unit.*

### **Course contents:**

#### **UNIT - I**

1. Geostrategic location of Mizoram: Historical and Socio-political perspectives.
2. Physical Aspects: Geology, Relief, Drainage, Climate, Soil and Vegetation.
3. History and Evolution of Settlements in Mizoram; Factors affecting Types and Patterns of Settlement.
4. Cultural Traits of Mizoram: Ethnic Groups, Language and Religion.

#### **UNIT – II**

5. Population Characteristics: Population Growth, Density, Sex-ratio and Occupational Structure.
6. Rural-urban Settlements, Rural-Urban Population and Migration
7. Economic Profile of the State - Agriculture, Land use, Small-Scale and Cottage Industries and Transport.
8. Resource Base – Forest, Water and Minerals

### **Suggested readings:**

1. Baveja, J.D.(1970) : The Land Where The Bamboo Flowers, Publication Board, Assam, Gauhati
2. Bose et.al. (eds) (1990) : Tribal Demography and Development in North East India, The Assn. for Study of Population, Delhi.
3. Nunthara, C. (1989) : The Impact of Introduction of Grouping of Villages in Mizoram, Delhi.
4. Pachuau, Rintluanga (2009): Mizoram: A Study in Comprehensive CDMraphy, Northern Books Centre, New Delhi
5. Prasad, R.N. and A.K. Agarwal (1991) : Political and Economic Development of Mizoram, Mittal Publication, New Delhi.
6. Ray, A.C. (1982) : Mizoram : A Dynamic of Change, Pearl Publishers, Calcutta.
7. Sarkar, K. and D.R. Nandy : Structure and Tectonics of Tripura – Mizoram Area : India, GSI Misc. Pub. Part I.
8. Singh, S.N (1994)., Mizoram : Historical, CDMraphical, Social, Economic, Political and Administrative., Mittal Publications , New Delhi.
9. Gopalakrisnan, R. (1991) : The North East India Land, Economy and People, New Delhi.
10. Kumar, G. (2012): Dynamics of Development and Planning: Mizoram - A Comprehensive Regional Analysis, Kalpaz Publication, New Delhi.

## **CDM/FP/604: RURAL BASED FIELD PROJECT**

**Credits: 4**

**Marks : 100**

**Duration: 4Hrs/Week**

**Objectives:** To expose students to study Disaster Management Plan (Institution/ Locality/ Area), hazard assessment, vulnerable assessment and risk assessment within rural area. The students have to write a report on this project.

**The distribution of marks will be as follows:**

A. Project Report: 70 Marks

B. Viva-voce: 30 Marks

Note: The examination shall be conducted by two examiners of which one should be an external examiner.

## **CDM/DISS/649: DISSERTATION-I**

**Credits : 6**

**Marks :100**

**Duration: 6 Hrs/Week**

*The students will be assigned dissertation topics under one supervisor within their 3<sup>rd</sup> Semester period. pThe examination will be conducted by two examiners of which one shall be an external examiner.*

**Scheme of Evaluation of Dissertation:**

A. By the Supervisor : 25 Marks (Report only)

B. By External Examiners

1. Report : 50 Marks

2. Viva-voce : 25