



ଓଡ଼ିଶା ରାଜ୍ୟ ମୁକ୍ତ ବିଶ୍ୱବିଦ୍ୟାଳୟ, ସମ୍ବଲପୁର, ଓଡ଼ିଶା  
**Odisha State Open University, Sambalpur, Odisha**  
Established by an Act of Government of Odisha.

## Syllabus

### Post Graduate Diploma in Disaster Management (PGDDM)

#### Programme Objective:

The Programme has been framed with an intention to provide a general concept in the dimensions of disasters caused by nature beyond human control as well as the disasters and environmental hazards induced by human activities with emphasis on Natural disaster, Man-made disaster, Application of GIS and ICT in Preparedness, Response, Rehabilitation and Recovery. This course objective is to meet the needs of people involved in disaster management for both sudden-onset natural disasters (i.e., earthquakes, floods, hurricanes) and slow-onset disasters (i.e., famine, drought). This course is designed for government personnel, representatives of private voluntary agencies, and other individuals interested in disaster management.

It is innovative, skill and employment oriented to attract bright students to the discipline of Disaster Management. Thus, ensuring University – Industry interface in Skill-based education and community linked approach.

**Duration: 18 Months**

**Total Credits: 48**

| Course Code  | Course Title  | Credits   | No. of Units |
|--------------|---|-----------|--------------|
| PGDDM-01     | Introduction to Disaster Management                           | 6         | 18           |
| PGDDM-02     | Geographical Information System and IT in Disaster Management | 6         | 23           |
| PGDDM-03     | Risk Assessment and Vulnerability Analysis                    | 4         | 12           |
| PGDDM-04     | Disaster Preparedness and Response                            | 4         | 20           |
| PGDDM-05     | Recovery, Rehabilitation and Reconstruction                   | 4         | 16           |
| PGDDM-06     | Reporting, Information and Documentation in Disasters/PROJECT | 8         | 08           |
| PGDDM-07     | E-Governance and Emerging technology in Disaster Management   | 6         | 13           |
| PGDDM-08     | Community Linkage in Disaster Management                      | 6         | 14           |
| PGDDM-09     | Case Studies in Disaster Management                           | 4         | 11           |
| <b>TOTAL</b> |   | <b>48</b> | <b>136</b>   |

| <b>Course – I (6 Credits)</b>                   |   |
|---|---|
| <b>Introduction to Disaster Management</b>      |   |
| <b>Block – I: Introduction</b>                  |   |
| Unit - 1  | Hazard, Risk, Vulnerability, Disaster   |
| Unit - 2  | Meaning, Nature, Importance, Dimensions & Scope of Disaster Management  |
| Unit - 3  | Disaster Management Cycle   |
| <b>Block – II: Natural Disasters</b>            |   |
| Unit - 1  | Natural Disasters- Meaning and nature of natural disasters, their types and effects   |
| Unit - 2  | Hydrological Disasters - Flood, Flash flood, Drought, cloud burst   |
| Unit - 3  | Geological Disasters- Earthquakes, Tsunamis, Landslides, Avalanches, Volcanic eruptions, Mudflow  |
| <b>Block – III: Types of Natural Disasters</b>  |   |
| Unit - 1  | Wind related- Cyclone, Storm, Storm surge, Tidal waves, Heat and cold Waves   |
| Unit - 2  | Climatic Change   |
| Unit - 3  | Global warming  |
| Unit - 4  | Sea Level rise  |
| Unit - 5  | Ozone Depletion   |
| <b>Block – IV: Man – made Disasters</b>         |   |
| Unit - 1  | CBRN – Chemical disasters, biological disasters, radiological disasters, nuclear disasters  |
| Unit - 2  | Fire – building fire, coal fire, forest fire, Oil fire  |
| <b>Block – V: Types of Man – made Disasters</b> |   |
| Unit - 1  | Accidents- road accidents, rail accidents, air accidents, sea accidents   |
| Unit - 2  | Pollution - air pollution, water pollution  |
| Unit - 3  | Deforestation, Industrial waste   |
| <b>Block – VI: Disaster Determinants</b>        |   |
| Unit - 1  | Factors affecting damage – types, social status, habitation pattern, physiology and climate   |
| Unit - 2  | Factors affecting mitigation measures, prediction, preparation, communication, area and accessibility, population, physiology and climate |

| <b>Course – II (6 Credits)</b>  |  |
|---|--|
| <b>Geographical Information System and ICT in Disaster Management</b> |  |
| <b>Block – I: Geographical Information System (GIS)</b>               |  |
| Unit - 1  | Definition of GIS, Concept of Space and Time, Spatial data   |
| Unit - 2  | Map Projection and Datum   |
| Unit - 3  | Domains of Spatial information system, Components of GIS (/Hardware, Software, Data, People and Process)   |
| Unit - 4  | GIS Functionalities for end user / system (Data Acquisition, Data Input, Data Management, Data Analysis, Data Modeling and Data Output)  |
| Unit - 5  | Web based GIS Technology   |
| <b>Block – II: Remote Sensing</b>                                     |  |
| Unit - 1  | Introduction to Remote Sensing, Fundamentals of Remote Sensing, Electromagnetic Radiation, Electromagnetic Spectrum, Energy interaction with Atmosphere, Energy interaction with Earth Surface, Platform and Sensors |
| Unit - 2  | Characteristics of Image, Image Interpretation and Analysis – Visual Image Interpretation & Digital Image Processing   |
| Unit - 3  | Microwave Remote Sensing   |
| Unit - 4  | Remote Sensing Application in Disaster Management  |
| Unit - 5  | Scenario of Indian Remote Sensing Satellites in future   |
| <b>Block – III: Advanced Technologies for Warning System</b>          |  |
| Unit - 1  | Definition of Early Warning System, Community Early Warning System, Core Components of People centered Early Warning System  |
| Unit - 2  | Emergency Communication System, Wireless Communication, Bluetooth Wireless Technology, HAM Radio, GPS Application in Emergency Communication   |
| Unit - 3  | Remote Sensing and GIS Application in Warning System   |
| Unit - 4  | Cyclone Warning System and Tsunami Warning System  |
| <b>Block – IV: Computer Application</b>                               |  |
| Unit - 1  | Introduction to computer, its components and functions, Data Storage: Primary and Secondary storage, Introduction to various computer devices such as keyboard, mouse, printers, disk files, floppies etc            |
| Unit - 2  | Operating systems such as DOS, Windows and UNIX  |
| Unit - 3  | Use of MS-Office Package, MS Word, MS Excel, MS Access   |
| Unit - 4  | Use of Internet  |
| <b>Block – V: Importance of Information in Disasters</b>              |  |
| Unit - 1  | Methods of collecting relevant information – libraries, internet, interviews questionnaires, survey, observation, Mass media, Meetings   |
| Unit - 2  | Role of Information from disaster affected community   |
| <b>Block – VI: Role of Information Technology in Disasters</b>        |  |
| Unit - 1  | Disaster management Information System   |
| Unit - 2  | Organizing and effective dissemination of information: feedback for improving information  |
| Unit - 3  | Role of Communication in Disasters, Types of communication in case of disasters –HAM radio, Satellite, Video Conferencing, Electronics devices   |

| <b>Course – III (4 Credits)</b>                                      |  |
|--|--|
| <b>Risk Assessment and Vulnerability Analysis</b>                    |  |
| <b>Block – I: Introduction</b>                                       |  |
| Unit - 1   | Risk Concepts, Elements Of Risk, Perception of Risk, Acceptable risk, Requirements in Risk assessment  |
| Unit - 2   | Risk Reduction-Mainstreaming “Risk”  |
| Unit - 3   | Role of science and technology in Disaster Risk Reduction  |
| Unit - 4   | Strategies of Risk reduction, International Mobilization of Risk reduction   |
| <b>Block – II: Risk Assessment &amp; Reduction</b>                   |  |
| Unit - 1   | Risk analysis techniques; Process of Risk assessment, Analytical systems for risk assessment, Natural hazard/ risk assessment, Understanding climate risk, Mapping of risk assessment, Decision making for risk reduction, Problems in risk assessment |
| Unit - 2   | Participatory risk assessment - Rationale for people’s participation, Role of civil society organizations, Impact of Globalization, Activities and roles for the community action<br>Risk reduction, Participatory risk assessment methods             |
| <b>Block – III: Vulnerability</b>                                    |  |
| Unit - 1   | Observation and perception of vulnerability- Vulnerability Identification, Vulnerability types and dimensions, Vulnerability- Social factors and economic factors  |
| Unit - 2   | Vulnerability to shanty settlements; Vulnerability in the city, Risk in Urban areas, Issues in urban planning, Initiatives for risk reduction in India   |
| <b>Block – IV: Strategic development for Vulnerability reduction</b> |  |
| Unit - 1   | Physical & Social infrastructure for Vulnerability reduction   |
| Unit - 2   | Interactive areas for Vulnerability reduction & Policy making  |
| Unit - 3   | Hazard resistant designs and construction  |
| Unit - 4   | Systematic management and Strategic planning for vulnerability reduction   |

| <b>Course – IV (4 Credits)</b>                                     |   |
|--|---|
| <b>Disaster Preparedness and Response</b>                          |   |
| <b>Block – I: Disaster Preparedness</b>                            |   |
| Unit - 1   | Disaster Preparedness: concept and significance   |
| Unit - 2   | Disaster Preparedness Measures  |
| Unit - 3   | Institutional Mechanism for Disaster Preparedness   |
| Unit - 4   | Disaster preparedness with special needs/ vulnerable groups   |
| Unit - 5   | Disaster Preparedness: Policy and Programmes  |
| <b>Block – II: Disaster Preparedness Plan</b>                      |   |
| Unit - 1   | Concept and Significance of Disaster Preparedness Plan  |
| Unit - 2   | Disaster Preparedness Plan essentials   |
| Unit - 3   | Community Based Disaster Preparedness plan  |
| Unit - 4   | Prediction, Early Warnings and Safety Measures of Disaster  |
| <b>Block – III: Role of Different Organizations / Institutions</b> |   |
| Unit - 1   | Role of Information, Education, Communication, and Training   |
| Unit - 2   | Role of Government, International and NGO Bodies  |
| Unit - 3   | Role of Information Technology (IT) in Disaster Preparedness  |
| Unit - 4   | Role of Geographers on Disaster Management  |
| <b>Block – IV: Disaster Response</b>                               |   |
| Unit - 1   | Essential Components of Disaster Response, Disaster Response Plan, Resource Management- Financial, Medical, equipment, communication, Human, transportation, Food and essential commodity (Identification, Procuring, Propositioning and deployment), Directing and controlling functions |
| Unit - 2   | Communication, Participation & activation of Emergency Preparedness Plan, Logistics Management, Emergency support functions, Need and damage assessment   |
| <b>Block – V: Coordination in Disaster Response</b>                |   |
| Unit - 1   | Disaster Response Plan - Communication, Participation, and Activation of Emergency Preparedness Plan  |
| Unit - 2   | Search, Rescue, Evacuation and Logistic Management  |
| <b>Block – VI: Psychological Response and Management</b>           |   |
| Unit - 1   | Psychological Response and Management (Trauma, Stress, Rumor and Panic)   |
| Unit - 2   | Relief and Recovery   |
| Unit - 3   | Medical Health Response to Different Disasters  |

| <b>Course – V (4 Credits)</b>  |  |
|--|--|
| <b>Recovery, Rehabilitation and Reconstruction</b>                   |  |
| <b>Block – I: Rehabilitation, Reconstruction and Development</b>     |  |
| Unit - 1   | Rehabilitation, Reconstruction and Development-Concept, Meaning, Types of Rehabilitation and Reconstruction  |
| Unit - 2   | Importance of Disaster Mitigation, Cost – benefit analysis, relationship between vulnerability and development   |
| Unit - 3   | Damage Assessment- Post Disaster Damage assessment, estimated damage assessment due to probable disasters  |
| Unit - 4   | Sample Surveys, Epidemiological Surveillance, Nutrition Centered Health Assessment, Remote sensing and Aerial photography, nature and damage to houses and infrastructure due to different disasters |
| <b>Block – II: Role of Different Organizations in Rehabilitation</b> |  |
| Unit - 1   | The Government and Disaster Recovery and rehabilitation  |
| Unit - 2   | Disaster and Non Governmental efforts  |
| Unit - 3   | Role of Local Institutions; Insurance, Police, Media   |
| <b>Block – III: Reconstruction</b>                                   |  |
| Unit - 1   | Speedy Reconstructions- Essential services, Social infrastructures, Immediate shelters/camps, Contingency plans for reconstructions  |
| Unit - 2   | Development of Physical and Economic Infrastructure- Developing Physical and Economic Infrastructure, Environmental Infrastructure development   |
| <b>Block – IV: Disaster Resistant House Construction</b>             |  |
| Unit - 1   | Guidelines for Disaster resistant construction, traditional techniques, Seismic strengthening of houses in low rain/High rainfall area, earthquake resistant construction technique                  |
| Unit - 2   | Funding arrangements- Funding arrangements at state level and central level, Fiscal discipline, role of International agencies, mobilization of community for resource generation                    |
| <b>Block – V: Rehabilitation</b>                                     |  |
| Unit - 1   | Rehabilitation - Socio- economic Rehabilitation- Temporary Livelihood Options and Socio-Economic Rehabilitation  |
| Unit - 2   | Education and awareness and role of Information Dissemination, Participative Rehabilitation  |
| Unit - 3   | Role of various agencies in Recovery Work- Monitoring and Evaluation of rehabilitation work, Rehabilitation process  |
| <b>Block – VI: Recovery</b>  |  |
| Unit - 1   | Concept of recovery, livelihood and approach to reconstruction, Livelihood restoration   |
| Unit - 2   | Speedy recovery, Linking Recovery with safe development, Creation of Long-term job opportunities   |

| <b>Course – VI (8 Credits)</b>                               |   |
|--|---|
| <b>Reporting, Information and Documentation in Disasters</b> |   |
| <b>Block – I: Media</b>                                      |   |
| Unit - 1   | Types of Media  |
| Unit - 2   | Importance of role of media – informative, suggestive and analytical  |
| Unit - 3   | Role of Media in Disaster Mitigation  |
| <b>Block – II: Reporting</b>                                 |   |
| Unit - 1   | Factual and Ethical Reporting   |
| Unit - 2   | Impact of Media Coverage and Public Communication and Handling of Media   |
| <b>Block – III: Documentation</b>                            |   |
| Unit - 1   | Principles of Report Writing and Guidelines according to style manuals  |
| Unit - 2   | Writing and Presentation of Preliminary, Main body and Reference section of Report, Evaluation of Research Report   |
| <b>Block – IV: Dissertation / Project Report *</b>           |   |
| Unit - 1   | <p style="text-align: center;">TOPIC / CASE STUDY:</p> <p>Disaster affected Area: Cyclone – Orissa 1999 Super Cyclone, Flood – Bihar floods, Tsunami – Tsunami of South India, Heat waves – Heat waves of Andhra Pradesh and Odisha and Cold waves – Cold waves of U.P., Earthquakes – Bhuj Earthquakes, Landslides – landslides in North East, Drought, Storm, Global warming; Air Pollution – Bhopal Gas Tragedy, Forest fire, Industrial waste, Shelter Home: Cyclone</p> <p style="text-align: center;">OR</p> <p>Any topic relevant to either Natural Disaster or Man-Made Disaster.</p> |

**N.B.:** The student shall choose a Dissertation / Project Topic at the end of the 1<sup>st</sup> semester. He / She should submit Project Report by 30<sup>th</sup> April.

\* 04 Credits will be awarded for the Project Report.

| <b>Course – VII (6 Credits)</b>   |  |
|---|--|
| <b>E-GOVERNANCE , EPIDEMIOLOGY AND EMERGING TECHNOLOGY IN DISASTER MANAGEMENT</b> |  |
| <b>Block -I E-Governance</b>  |  |
| Unit - 1  | E-Governance : Concept and Significance                                  |
| Unit - 2  | E-Governance in Urban Development  |
| Unit - 3  | E-Governance in Rural Development  |
| Unit - 4  | ICT Implementation in Governance: Issues and Challenges                  |
| <b>Block -II Disaster Epidemiology</b>  |  |
| Unit - 1  | Epidemiological Study of Disaster  |
| Unit - 2  | Education and Training in Health Management of Disasters                 |
| Unit - 3  | Role of Information and Communication Technology in Health Response      |
| Unit - 4  | Prevention of Risk   |
| <b>Block – III: Emerging trends in Disaster Management 1</b>                      |  |
| Unit - 1  | Use and Application of Emerging Technologies in Disaster Preparedness-I  |
| Unit - 2  | Use and Application of Emerging Technologies in Disaster Preparedness-II |
| Unit-3  | Disaster Management –Recent Trends                                       |
| <b>Block – IV: Emerging trends in Disaster Management 2</b>                       |  |
| Unit - 1  | Emerging Trends in Disaster Mitigation-I                                 |
| Unit - 2  | Emerging Trends in Disaster Mitigation-II                                |
| Unit - 3  | Disaster and Development   |



**Course – VIII (6 Credits)**

**COMMUNITY LINKAGE IN DISASTER MANAGEMENT**

**Block I Community based Approach**

|          |   |
|----------|---|
| Unit - 1 | Community Based Disaster Management                               |
| Unit - 2 | Human Behavior and Response: Individual, Community, Institutional |
| Unit - 3 | Community Participation and Awareness                             |

**Block II Community Health**

|          |                                   |
|----------|-----------------------------------|
| Unit - 1 | Community Health During Disasters |
| Unit - 2 | Drinking Water                    |
| Unit - 3 | Food and Nutrition                |
| Unit - 4 | Hygiene and Sanitation            |
| Unit - 5 | Community Health Management       |

**Block – III: Disaster Site Management in Community**

|          |                                |
|----------|--------------------------------|
| Unit - 1 | Disaster Site Management       |
| Unit - 2 | Remote Area Planning           |
| Unit-3   | Emergency Health Operations    |
| Unit-4   | Disaster Management Strategies |

**Block – IV: Soft skills for Disaster Manager**

|          |  |
|----------|--|
| Unit - 1 | Disaster Manager                                   |
| Unit - 2 | Leadership and Coordination in Disaster Management |
| Unit - 3 | Life skills  |
| Unit - 3 | Time Management Skills                             |

| <b>Course – IX (4Credits)</b>   |   |
|---|---|
| <b>CASE STUDIES IN DISASTER MANAGEMENT &amp; REHABILITATION/RE-SETTLEMENT</b> |   |
| <b>Block I Global Case Studies in Disaster Management</b>                     |   |
| Unit - 1  | Japan's Tohoku Earth Quake 2011 and Nepal Earthquake (2015)           |
| Unit - 2  | China floods 2016 and Thailand floods 2017                            |
| Unit - 3  | Hurricane Katrina (2005)  |
| Unit - 4  | East Africa Drought (2011)  |
| Unit - 5  | Volcanic Eruptions: Case Studies Of Italy                             |
| <b>Block II National Case Studies in Disaster Management</b>                  |   |
| Unit - 1  | Indian Ocean Earthquake (2004)(Tsunami) and Gujarat Earthquake (2001) |
| Unit - 2  | Uttarakhand Flash Floods and Kashmir Floods                           |
| Unit - 3  | Drought Management in Gujarat & Rajasthan                             |
| Unit - 4  | Landslides in Shiwalik Hills Case Study                               |
| Unit - 5  | Avalanches in Jammu and Kashmir: Case Studies                         |
| Unit - 6  | Pukhrayan train derailment 20 November 2016 and Bhopal Gas Tragedy    |
| <b>Block – III: Case Studies in Disaster Management in Odisha</b>             |   |
| Unit - 1  | 1999 Odisha super cyclone   |
| Unit - 2  | Cyclone Phailin   |
| Unit-3  | Cyclone Hudhud  |
| Unit-4  | Floods in Odisha  |
| Unit-5  | SUM Hospitals fire, Bhubaneswar                                       |