Certification Course - Disaster Management
Department of Geology, Farook College (Autonomous)
Under RUSA Scheme

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1. **Module 1 – Introduction to Disaster Management**
    1. Natural Hazards and Unnatural Disasters – How a disaster is constructed from a hazard.
        i. Disaster - Hazard relation – Explanation with examples and case study.
        ii. Nature's Power and Humans Vulnerability
        iii. #No Natural Disasters
        iv. Disaster Risk Management.

    2. Basic terminology in disaster management
        i. Hazard
        ii. Disaster
        iii. Exposure
        iv. Vulnerability
        v. Capacity

    3. Hazard & Disaster typology and examples.
        i. Geological Hazards/Disasters – Earthquakes, Volcanic Eruption, Landslides, Tsunamis, Subsidence.
        ii. Hydro-meteorological Hazard/ Disasters– Floods, Hurricanes, Typhoons, Cyclones, Tornados, Droughts, Heatwaves, Winter Storms
        iii. Biological Hazards/ Disasters – Disease Outbreaks (Spread of infectious disease among humans, animals & plants), Epidemics/ Pandemics, Biological Contaminants.
        iv. Chemical Hazards/ Disasters – Hazardous Material Incidents (Accidental release of toxic flammable or reactive substances), Chemical Spills
        v. Technological Hazards/ Disasters– Nuclear Accidents, Industrial Accidents, Cyber Attacks.
        vi. Societal Hazards/ Disasters – Terrorism, Stampede/ Crowd Crush, Civil Unrest (protest, riots), War.
        vii. Extraterrestrial Hazard - Meteorite Impact, Space Hazard
        viii. Physical Hazard - Fire, Accidents etc..

    4. Disaster Management Cycle
        i. Mitigation
        ii. Preparedness
        iii. Response
        iv. Relief and Rehabilitation
        v. Recovery
    5. Disaster Classification and Response Levels

i. Level 1 (L1)
ii. Level 2 (L2)
iii. Level 3 (L3)

2. **Module 2 – International Framework and Cooperations in Disaster Management**
    1. Significance of international cooperation in Disaster Management
        i. International Decade for Natural Disaster Reduction (1990 – 1999)
            1. Origins and Objectives of the International Decade
            2. Key Milestones and Campaigns
        ii. Hyogo Framework for Action (2005 – 2015)
            1. Rationale and Principles of the Hyogo Framework
            2. Priorities and Strategies for Disaster Risk Reduction
            3. Challenges and Lessons Learned from the Hyogo Framework Implementation
        iii. Sendai Framework for Disaster Risk Reduction
            1. Development and Goals of the Sendai Framework
            2. Focus Areas: Understanding Risk, Strengthening Governance, Investing in Resilience, Enhancing Preparedness
            3. Regional and Global Implementation of the Sendai Framework
    2. Historical Context and evolution of disaster management approaches
        i. Paradigm shift in Disaster Risk Reduction - Shifting from Reactive to Proactive approaches
        ii. Implications of policy, planning and Practice in Disaster Management (Alongside Engineering Mitigation Practices)

3. **Module 3 – Understanding Disaster Risk Components**
    1. Hazard
        i. Hazard Analysis (Expected Magnitude)
        ii. Hazard Frequency (Seasonal Pattern)
        iii. Duration & Seasonal calendar (Probable time of occurrence in a year)
        iv. Speed of Onset (Probable amount of warning time)
    2. Hazard Zonation and Risk Informed Planning
        i. Factors for Hazard zonation
        ii. Demonstration of Hazard zonation maps of India
        iii. Risk informed planning practices
    3. Vulnerability
        i. Vulnerability Typology
            1. Physical Vulnerability
            2. Social Vulnerability
            3. Political Vulnerability
            4. Economic Vulnerability
        ii. Factors contributing to vulnerability
            1. Global factors
            2. Local Factors
        iii. Vulnerability analysis – Special reference to Urban Floods.
        iv. Disaster by Choice

v. Complexity of vulnerability

4. Exposure
    i. Dynamics of exposure
5. Coping Capacity and its Inverse Relation to Disaster Risk
    i. Capacity Analysis (Health facilities available, capacity building programs conducted, critical infrastructure, existing plan and policy, existing maps, emergency shelter facility available)
6. Disaster Risk
    i. Risk assessment
    ii. Risk matrix
    iii. Risk Communication
7. Risk management
        1. Risk Acceptance
        2. Risk Transfer
        3. Risk Reduction

4. Module 4 - Comprehensive Disaster Management and Humanitarian Response

1. Understanding Disaster Management and Emergency Management
    i. Scope & Focus
    ii. Emphasis Objective
    iii. Examples
    iv. Roles and responsibilities of different agencies and stakeholders
        1. Local Government
        2. State/ Provincial Government
        3. Federal/ National Government
        4. Non-Governmental Organisations (NGOs)
        5. Private Sector
        6. Community and Public
2. Post Disaster Consequences
    i. Disaster impact – Direct & indirect impact
    ii. Disaster effects – Immediate, short term, long term
    iii. Disaster Damage
    iv. Disaster loss
    v. Collaborative ways to reduce disaster impacts and effects.
3. Early Warning System & Disaster Monitoring
    i. Early warning systems for different disasters
    ii. Nodal Agencies in India for disaster warning
    iii. Interpretation of warning – A special reference to IMD flood & rainfall warnings.
4. Emergency Response and Coordination
    i. Evacuation
    ii. Evacuation Protocols
    iii. Challenges involved in emergency evacuation
    iv. Search & Rescue Operations
5. Humanitarian Relief and Rehabilitation
    i. Immediate aid, shelter and basic necessities

ii. Promoting social equity and human rights in disaster contexts
iii. Relief Camp management
iv. International cooperation and partnership
v. Transition from relief to rehabilitation and recovery

6. Long Term Recovery and Reconstruction
    i. Strategies for rebuilding communities and infrastructure
    ii. Economic recovery and livelihood restoration
    iii. Addressing psychological and social needs.
7. Sustainable Development and Disaster Risk Reduction
    i. Integrating DRR into development planning (Case studies and examples)
    ii. Community – Based Disaster Risk Reduction (CBDRR)
    iii. Engaging vulnerable and marginalized population – Inclusive Disaster Management
        1. Gender inclusive disaster risk reduction
        2. Disability inclusive disaster risk reduction
        3. Animal Centric Disaster Risk Reduction
    iv. Build Back Better Framework (BBB)
    v. Technological, Structural and Policy level Mitigation Measures
    vi. Disaster Preparedness and Education
8. Disaster Management Plan
9. Role of youth in Disaster Management

5. Module 5 – Evolution of Disaster Management System in India

1. India's Vulnerability Profile
2. Major disasters led to evolution of disaster management systems in India
    i. Odisha Super Cyclone 1999
    ii. Bhuj Earthquake 2001
    iii. 2004 Indian Ocean Tsunami
3. Disaster Management Act, 2005
    i. Paradigm shift through DM act and emergence of institutional arrangement of Disaster Management
4. Institutional framework under the DM act, 2005
    i. National Disaster Management Authority (NDMA)
    ii. National Executive Committee (NEC)
    iii. National Institute of Disaster Management (NIDM)
    iv. National Disaster Response Force (NDRF)
    v. State Disaster Management Authority (SDMA)
    vi. State Executive Committee (SEC)
    vii. District Disaster Management Authority (DDMA)
5. Financial Arrangements
    i. National Disaster Response Fund (NDRF)
    ii. Prime Minister's National Relief Fund (PMNRF)
    iii. State Disaster Response Fund
    iv. Chief Minister Relief Fund
6. Emergency Operation Centres

i. Standard operating principles – SEOC, DEOC
ii. Incident Response System (IRS)

7. National Disaster Management Plan and Policy.
8. State Disaster Management Plan & Preparedness.
9. Prime Minister 10 Point Agenda.
10. Disaster Profile of Kerala
    i. Vulnerability profile of Kerala
    ii. Hazard Analysis of Kerala
        1. Landslides
        2. Soil piping
        3. Cyclone
        4. Drought
        5. Floods & Urban Floods
    iii. Exploring a Spectrum of other significant Hazards
        1. Road/ Rail/ Air Accidents
        2. Water Related Incidents
        3. Electrocution Incidents
        4. Fire Incidences
        5. Industrial Accidents
    iv. Mitigation Strategies

6. Module 6 – Future Trends and Innovations in Disaster Management

1. Anticipating and adapting to evolving disaster scenarios -
    i. Climate Emergency
    ii. Urbanization
    iii. Pandemics
    iv. Cyber Threats
2. The role of innovation and technology in shaping the future of disaster management.
3. Introduction to Geographic Information Systems (GIS) and its applications in Disaster Management.
4. Understanding Google Earth interface and basic functionalities.
5. Demonstrating point, line, and polygon data visualization.
6. Utilizing Google Earth for data visualization, mapping, and disaster analysis – Case Study, 2020 Hyderabad Floods.
7. Understanding Importance of Learning Disaster Management
    i. Rationale
    ii. Empowering individuals and stronger neighbourhoods
    iii. Turning fear into confidence
    iv. Integrating disaster preparedness into daily life
    v. Building a stronger world
    vi. Career Pathways

References

1. Disaster By Choice-Ilan Kelman
2. Natural Hazards and Unnatural Disasters - The World Bank
3. Disaster Management Act, 2005 (India)
4. National Disaster Management Plan (India)
5. National Disaster Management Policy (India)
6. IPCC, AR6 Report