



Ecosystem Approach for Disaster Risk Reduction

Semester -I: July – December

Coordinator	Prof P K Joshi
Credits	4 Credits
Lecturers	Prof P K Joshi
Level	M.A.
Host institution	Special Centre for Disaster Research (SCDR), Jawaharlal Nehru University, New Delhi
Course duration	One Semester [July - December] Started in July 2020

Summary

This one full semester elective course provides the Master level students of Disaster Studies the basic understanding of ecosystem approach for disaster risk reduction. Besides, it will also introduce students to concepts, tools, methods for disaster risk reduction, specifically for climate and water related disasters. The course will touch upon frameworks at international, national and sub-national contest. The course includes individual assignments.

Target Student Audiences

Semester - III Students of M.A.

Prerequisites

- Nil

Aims and Objectives

This course has been designed with a view to help students in developing a comprehensive understanding and knowledge of importance of integrating ecosystem-based disaster risk reduction into development planning. It would emphasize on the need and preparedness for ecosystem management, disaster risk reduction, climate change and development. The main objectives of the course are: (i) to help students in understanding disaster typology, risk, and their impacts; (ii) to comprehend approaches and measures for disaster risk reduction; and (iii) to enumerate possible pathways, and options for disaster risk reduction and sustainable development.

General Learning Outcomes:

By the end of the course, students will successfully:

- Understand the disaster risk related factors and their impacts,
- Learn and appreciate importance of ecosystem based disaster risk reduction and planning,
- Identify and visualize the entry points for integration ecosystem based approaches in disaster risk reduction across sectors.

Overview of Sessions and Teaching Methods

The course will make most of interactive and self-reflective methods of teaching and learning including mainly lectures and presentations. It will start with an overview of disaster-risk reduction concepts and related concepts. Subsequently it will build the science



and practice of assessment methods and integration of geospatial approaches. The sessions will be take help of blended teaching and learning approaches for interaction lecturing on different course components.

Course Workload

The table below summarizes course workload distribution:

Activities	Learning outcomes	Assessment	Estimated workload (hours)
In-class activities			
Lectures and Presentations	Introduction to the course work Basics and interconnections of ecology, environment and ecosystem. Introduction to EcoDRR, Natural resources management and traditional environmental wisdom and disasters.	Mid Semester Examination	06
Lectures and Presentations	Introduction to fundamentals of disaster risk reduction, Disaster typology and linkages of environment, development and disasters Revisiting the concepts of hazard, risk, vulnerability, disaster, mitigation, risk reduction and its evolution Disaster risk management (emergency, response, relief; resilience, reconstruction, recovery)	Mid Semester Examination	08
Lectures and Presentations	Disaster risk mitigation - evolution in the concept and framework from 'Response and Relief' to 'Mitigation and Preparedness'. Approaches in disaster management—engineering based solutions; community based solutions; ecosystem approach; and externality based response and relief approach, etc. Risk reduction, climate change adaptation and environment	Mid Semester Examination	06
Lectures and Presentations	Disaster risk management - UN-PEDRR (Partnership for Environment and Disaster Risk Reduction), Strategic Environmental Assessment (SEA) and its linkages with ecosystem approach to disaster risk reduction (EcoDRR). Legislations, Codes & Standards, Risk sensitive land use planning, Safety auditing in disaster risk planning, reduction and management	End Semester Examination	08
Lectures and Presentations	Tools and approaches for EcoDRR and CCA Millennium Ecosystem Assessment and the importance of the ecosystem services		06



	(provisioning, regulating, supporting and cultural) and human well being		
Lectures and Presentations	Ecological approaches for mountain hazards: landslides, debris flow, rock fall and avalanches; coastal hazards: storms, flooding, rising sea level; urbanization: heat island effect, flooding, urban resilience; forest: fires, health and pest management, agriculture and water resources management and climate change. Integrated ecosystem management, water resources management, coastal zone management, fire management, protected area management and community based ecosystem and disaster risk management	End Semester Examination	06
Lectures and Presentations	Geospatial tools for ecosystem based disaster risk reduction (decision tools). Cost Benefit Analysis for Ecosystem-Based Disaster Risk Reduction Interventions	End Semester Examination	06
Independent work			
Individual Assignments	Ability to interpret data, and to use the concepts, tools, and methods for communicating information	Individual Presentations	10
Total			56

Grading

The students' performance will be based on the following:

- Quizzes/Surprise Test – 10%
- Mid Semester Examination – 30%
- End Semester Examination – 50%
- Individual Assignments – 10%

Course Schedule: **Semester-III: July - December 2020**

Course Assignments

The Structure of Individual Assignments will be as follows:

- Conducting Interviews in the field.
- Review of research articles and working paper with given objectives.

Literature

- Buyck, C., Miththapala, S., Monty, F., and Murti, R. (2017). Ecosystems protecting infrastructure and communities: lessons learned and guidelines for implementation. IUCN
- Estrella M and N Saalismaa (2013) Ecosystem-based disaster risk reduction (Eco-DRR): An overview. In: Renaud FG, Sudmeier-Rieux K, Estrella M (eds) The role of ecosystems in disaster risk reduction. UNU Press, Tokyo, pp 26-54.
- IUCN (2009). Ecosystem-based Adaptation: a natural response to climate change, IUCN.
- MEA (2003). Millennium Ecosystem Assessment. Ecosystems and Human Well-being: Current State and Trends, Vol 1. Scholes, R (eds). (2003). Washington: Island Press.



- NIDM (2012). Ecosystem Approach to Disaster Risk Reduction. National Institute of Disaster Management (NIDM) (2012). New Delhi: NIDM.
- Renaud FG, Sudmeier-Rieux K, Estrella M (eds) (2013) The role of ecosystems in disaster risk reduction. UNU Press, Tokyo, Japan.
- Renaud, F. G., Sudmeier-Rieux, K., Estrella, M., & Nehren, U. (2016). Ecosystem-Based Disaster Risk Reduction and Adaptation in Practice. Advances in natural and technological hazards research. Springer.
- Renaud, F., Sudmeier, K. and Estrella, M. (eds) (2013). Role of ecosystems in disaster risk reduction, United Nations University Press, New York
- Sudmeier, K. et.al. (2006) Ecosystems, Livelihoods and Disasters. An Integrated Approach to Disaster Risk Management. Gland: IUCN