

## **Objectives**

The course is framed to provide an overview of the occurrence, causes and consequences of disaster and understanding of fundamental concepts and application of disaster resilient design. It introduces formulation of management plan and disaster mitigation strategies

### **Module-1**

#### **INTRODUCTION**

Overview of disaster, major natural disasters - flood, tropical cyclone, droughts, landslides, heat waves, earthquakes, fire hazards etc; Hazard (earthquake and cyclone) map of the world and India

### **Module 2**

#### **DESIGN FOR CYCLONE**

Climate change and its impact on tropical cyclone; Nature of cyclonic wind; Behaviour of structures in past cyclones and wind storms, case studies.

Cyclonic retrofitting - strengthening of structures and adaptive sustainable reconstruction; Life-line structures such as temporary cyclone shelter.

General planning/design considerations, Norms and Standards for wind storms & cyclones; Coastal zoning regulation for construction & reconstruction phase in the coastal areas; innovative construction materials & techniques; traditional construction techniques in coastal areas.

### **Module 3**

#### **DESIGN FOR EARTHQUAKE**

Causes of earthquake; Past effects of earthquake on ground and building - Behaviour of various types of buildings, structures, and collapse patterns;

Seismic retrofitting - Weakness in existing buildings, concepts in repair, restoration and seismic strengthening.

General Planning and design consideration, Norms and Standards; Various types and construction details - Foundations, retaining walls, plinth fill, flooring, walls, openings, roofs and boundary walls. Innovative construction materials and techniques, traditional regional practices

### **Module 4**

#### **DISASTER MANAGEMENT**

Strategies for disaster prevention and mitigation; Disaster management plan; National crisis management committee; state management group

### **Module 5**

Exercises on design and construction techniques for disaster resilient buildings

## **Reference**

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3. *Singh, P. P. and Sharma, S. (2006). Modern dictionary of natural disaster. Deep & Deep Publications.*
4. *Simiu E. and Scanlan R. H. (1996). Wind Effects on Structures-Fundamentals and Applications to Design. 3rd Edn., John Wiley.*

5. Sinha, P. C. (2006). *Disaster Mitigation, preparedness, recovery and Response*. New Delhi : SBS Publishers.
6. Talwar, A. K. and Juneja, S. (2009). *Cyclone Disaster Management*. Commonwealth Publishers.
7. Taranath, B. S. (2004). *Wind and Earthquake Resistant Buildings: Structural Analysis and Design*. CRC Press.
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9. World Bank. (2009). *Handbook for Reconstructing after Natural Disasters*.
10. *Seismic Design hand book for Buildings*
11. *Earth quake Architecture: New construction techniques for quake disaster Prevention*.