



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
Shri Vaishnav Institute of Technology and Science
Choice Based Credit System (CBCS) in Light of NEP-2020
Civil Engineering Department
Generic Elective (Undergraduate Program)
2024

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY		PRACTICAL						
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*	L	T	P	CREDITS
GUCE502	GE	Disaster Resistant Structures and Construction Practices	60	20	20	0	0	4	0	0	4

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit.

*Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

Impart knowledge of the principle and design of disaster resistant building as per design philosophies and codes.

Course Outcomes (COs):

The student will be able to

1. Understand about different types of disasters.
2. Classify different disaster-prone areas.
3. Understand provisions of disaster resistant structures.

UNIT I

12 Hrs.

Introduction to Disaster and Prone Areas: Basic characteristics of disasters: its behaviour and important parameters: Earthquake Risk; Different seismic zones – Zone II, Zone III, Zone IV, Zone V; Cyclone Risk Areas – Zone I, II, III and IV; Flood Risk; Landslide; Fire; Blasting.

UNIT II

12 Hrs.

Damage Types and Reasons: Damage due to natural hazards; Earthquake Damage – Types and causes; Cyclone Damage – Types and causes; Flood/ Rain – Types and Causes; Vulnerability of Non-Engineered Buildings against Earthquake, Cyclone & Flood Hazards.

UNIT III

12 Hrs.

Basic Rules of Disaster Resistant Design: Disaster Resistant Construction Principles, Location of the structure, Building plan, Walls - Length, Height, Thickness & Connection; Walls – Openings; General Rules of Masonry - For Brick, Concrete Blocks & Stone.

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UNIT IV

12 Hrs.

Concrete and Masonry Buildings: Typical damage and failure patterns of brick masonry, causes of damages in brick masonry, Damage to RCC buildings: Sliding of roof support, falling of infill walls, crushing of column ends, diagonal cracking of column beam joints, pulling out of reinforcement bars, foundation sinking and tilting, Typical damage, and failure of stone masonry, causes of damages in stone masonry.

UNIT V

12 Hrs.

Codal Provisions: Guidelines for improving the cyclonic resistance of low-rise houses and other buildings/structures as per IS 15498:2004

Code of Practice for Earthquake Resistant Design and Construction of Buildings as per IS 4326, 1993.

Textbooks:

1. Manual on Hazard Resistant Construction in India d by Rajendra Desai and Rupal Desai, National Centre For People's - Action In Disaster Preparedness. (NCPDP).
2. Earthquake Disaster Reduction: Masonry Buildings, Design and Construction by Anand S. Arya 2007
3. Earthquake Resistant Design of Structures Duggal, S. K. Oxford University Press, Delhi, 2013

Reference Books:

1. IS 15498:2004, Guidelines for improving the cyclonic resistance of low-rise houses and other buildings/structures
2. IS 4326, 1993, Code of Practice for Earthquake Resistant Design and Construction of Buildings.

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