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 Courses)

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
GUCE105	**GE**	**Disaster Resistant Structures and Construction Practices**	60	20	20	0	0	3	0	0	3

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 **07 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 **08 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 **09 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.

UNIT IV **08 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

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reinforcement bars, foundation sinking and tilting, Typical damage, and failure of stone masonry, causes of damages in stone masonry.

UNIT V **08 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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