

Devi Ahilya University, Indore, India Institute of Engineering & Technology			
Subject code and name	Type	L-T-P	Credits
VLR8E4: Design of Earthquake Resistant Structures	L	T	P
	PE	3-1-0	4

COURSE CONTENTS

Unit - 1

Elements of Earthquake Engineering: Earthquake magnitude and intensity, Focus and Epicentre, Causes and Effects of Earthquakes, Characteristics of Earthquake, Seismic zone mapping.

Unit - 2

Structural Systems For Seismic Resistance: Structural systems – building configuration, frames, walls, dual systems – response in elevation – plan – influence of structural classification Concepts of seismic design.

Unit - 3

Analysis for Earth Quake Loads: IS: 1893-2002- Seismic Coefficient method- modal analysis Applications to multi-storied building frames – water tanks – chimneys.

Unit - 4

Ductile Detailing: Ductility of R.C structures- Confinement- detailing as per IS-13920-1993-moment redistribution – principles of design of beams, columns – beam column joints – soft story concept.

Unit - 5

Base Isolation: Isolation systems – Effectiveness of base isolation.

Books & References Recommended:

1. Dynamics of structures – A.K. Chopra, Prentice Hall.
2. I.S. 1893 - 2002, Criteria for Earthquake Resistance design of Structures.
3. Pankaj Agarwal and Manish Shrikhande, Earthquake resistant design of structures, PHI 2006.

Course Outcomes: At the end of the course, the student will be able to:

1. Apply seismic coefficient and response spectrum methods for analysis of multi storied buildings
2. Apply concepts of ductility in the design of multi-storeyed structures
3. Analyse a water tank structure based on latest earthquake code
- 4 Understand the concepts of base isolation