Course Type	Course Code	Name of Course	L	T	P	Credit
DE	NCED512	**Earthquake Engineering**	3	0	0	3

Course Objective

The course aims at design of structures for their safety against seismic forces.

Learning Outcomes

After studying this course, students should be able to:

- Understand the earthquake resistant design philosophy
- Aware about different codal provisions regarding seismic design of structures.

Topics to be Covered	No. of lectures	Learning Outcomes
Concepts of Seismology and Introduction to Earthquake Resistant Design: Basics of Seismology, Seismic input characteristics, Behavior of structure under earthquake loading, Methods of seismic analysis.	**9**	Broad concept of engineering seismology and structural behavior under seismic loading.
Computation of Seismic Forces: Equivalent static method, Dynamic analysis method.	**9**	Code based design procedure for estimation of seismic forces.
Inelastic Dynamic Analysis of Structures: Force-based method, Displacement-based method.	10	Knowledge on inelastic analysis of structures.
Performance Based Design: Capacity spectrum, Pushover analysis, P-Delta Analysis, Provisions of FEMA guidelines.	9	Understanding the advanced concept of performance-based design.
Provisions of Ductile Detailing: Different guidelines as per Indian Standards.	**5**	Exposure towards ductile detailing guidelines.
Total hours	**42**	

Recommended Text Books:

1. Paulay, T. and Priestley, M.J.N. "Seismic Design of Reinforced Concrete and Masonry Buildings," John Wiley & Sons.
2. Reddy, G.R., Muruva, H. P. and Verma, A. K. "Textbook of Seismic Design", Springer

Recommended References:

1. Villaverde, R., "Fundamental Concepts of Earthquake Engineering", Taylor & Francis.
2. George G. Penelis and Andreas J. Kappos, "Earthquake Resistant Concrete Structures," E & FN Spon.