

Earthquake Resistant Design of Structures

Module 1:

Characteristics of earthquakes; Earthquake response of structures; Seismology, seismic risk and hazard, Soil dynamics and seismic inputs to structures, Characterization of ground motion; lateral load calculation, base shear

Module 2:

Earthquake intensity and magnitude; Recording instruments and base line correction; Predominant period and amplification through soil; Response spectrum, analysis, Spectral analysis,

Module 3:

Idealization of structural systems for low, medium and high rise buildings; Nonlinear and push over analysis, Dynamic soil-structure interaction. Earthquake design philosophy,

Module 4:

Concept of earthquake resistant design; Code provisions of design of buildings; Reinforcement detailing for members and joints, retrofitting and strengthening of structures, concept of base isolation design and structural control.

Text Book:

1. Clough R.W. and Penzien J., 'Dynamics of Structures', McGraw-Hill, 2nd edition, 1992
2. Earthquake Resistant Design: Shrikhandee & Agarwal-PHI Publ
3. Newmark N.M. and Rosenblueth E., 'Fundamentals of Earthquake Engg.', Prentice Hall, 1971.
4. David Key, 'Earthquake Design Practice for Buildings', Thomas Telford, London, 1988.
5. Wiegel R.L., 'Earthquake Engg.', Prentice Hall, 1970.
6. Blume J.A., Newmark N.M., Corning L.H., 'Design of Multi-storied Buildings for Earthquake ground motions', Portland Cement Association, Chicago, 1961.
7. Proc. World Conferences on Earthquake Engg., 1956-1992.
8. I.S. Codes No. 1893, 4326, 13920 etc.