CE 701: STRUCTURAL DYNAMICS AND EARTHQUAKE ENGINEERING (3-0-0: 3)

SDOF systems: Equations of Motion, Free vibration, damping, Forced vibrations under harmonic, impulse and general loadings, Response spectrum Generalized SDOF systems: Rigid body distributed mass and stiffness systems; MDOF Systems: Dynamic properties, modal damping, classical damping, modal superposition methods; Numerical methods in dynamics: Eigen value analysis, direct integration scheme: Continuous systems: Equations of motion, Hamilton's principle, Lagrangian formulation, Free and force vibration scheme, Wave propagation; Introduction to Random vibration: Random variables, Random process, moment and characteristic function, spectral analysis, response to random excitation; Application of structural dynamics in the design of block and frame foundation.

References

1. R.W. Clough and J. Penzien, Dynamics of Structures, Second edition, McGraw Hill international edition, 1993.
2. Mario Paz, Structural dynamics, CBS Publishers 1987.
3. Anil K. Chopra, Dynamics of structures: Theory and applications to earthquake engineering, PHI Ltd., 1997.
4. K. Rao, Vibration analysis and foundation dynamics, Wheeler, 1998.
5. E. Siniu and R. H. Scanlan, Wind effects on structures: fundamentals and applications to design, John Wiley and Sons, 1997.