

Course Name:
Vibrations of Structures

Course Number:
20153

Credit:
3

Course Content (outline):

- 1. Overview of Structural Dynamics**
- 2. Single Degree Of Freedom (SDOF) Systems**
 - 2.1 Equations of Motion
 - 2.2 Free Vibration Analysis
 - 2.3 Response to Harmonic Excitations
 - 2.4 Response to Pulse and Arbitrary Excitations
 - 2.5 Numerical Evaluation of Dynamic Response
 - 2.6 Response of Linear Systems to Earthquake Excitations
 - 2.7 Response of Non-linear Systems to Earthquake Excitations
- 3. Generalized SDOF Systems**
- 4. Multi Degree Of Freedom (MDOF) Systems**
 - 4.1 Equations of Motion
 - 4.2 Evaluation of Structural-Property Matrices
 - 4.3 Free Vibration Analysis
 - 4.4 Forced Vibration Analysis Using Mode Superposition Method
 - 4.5 Damping Models
 - 4.6 Earthquake Analysis of Linear Systems

References:

- Dynamics of Structures, Theory and Application to Earthquake Engineering, Anil K. Chopra, Prentice Hall, 4th Edition, 2006
- Dynamics of Structures, R.W. Clough and J. Penzien, McGraw Hill, 2nd Edition, 1993
- Dynamics of Structures, J.L. Humar, Prentice Hall, 1990