Year & Sem	Course Code: CE4610	Course Name: Introduction to Structural Dynamics and Earthquake Engineering	No. of Credits: 4	L 2	T&PS 2	P 0

UNIT-I: Concepts of Dynamics And Vibrations;

Discrete and continuous systems, Free Body Diagramme, D-Alembert's Principle, Energy principle, governing Equation of Motion for Free and forced Vibration, damped and Undamped Vibration.

UNIT-II: Free Vibration

Response for Damped and Undamped free vibration systems, critically damped, under damped, over damped vibration systems and applications.

UNIT-III: Forced Vibration

Response for damped and Undamped forced vibrations for harmonic, Periodic, Impulse and earthquake loading.

UNIT-IV:

Numerical Methods for free and forced Vibration Analysis, Central difference method, New marks method.

UNIT-V:

Governing equation of motion for Multi Degree freedom system, Response of Multi degree freedom Systems.

UNIT-VI:

Earthquake response spectrum, earthquake force calculation by equivalent static method of analysis and Response spectrum method of analysis, Ductile detailing, Strong Column- Weak Beam, Strong Beam-Weak Column. Ductile design of building as per IS 13920:1993.

Text Books:
1. Anil K Chopra, "Dynamics of Structures- Theory and applications to Earthquake Engineering" 3 rd edition, person India.
2. PankajAgarwal and Manish Shrikande "Earthquake Resistant Design of structures" Pearson India Publication, New Delhi.
References:
1. Maria and Paz, "Structural Dynamics- Theory and computation" 4th Edition, Springer Publisher.

Lecture Plan: Unit-I & -II syllabus for MID-I, Unit-III & -IV syllabus for MID-II and Unit-V & -VI syllabus for MID-III examinations.