



# STRUCTURAL DYNAMICS FOR CIVIL ENGINEERS – SDOF SYSTEMS

**PROF. RIYA CATHERINE GEORGE**

Department of Civil Engineering  
IIT Kanpur

**TYPE OF COURSE** : New | Elective | UG/PG

**COURSE DURATION** : 4 weeks (26 Aug'19 - 20 Sep'19)

**EXAM DATE** : 17 Nov 2019

**PRE-REQUISITES** : Basic programming skills to solve some assignment questions.

**INTENDED AUDIENCE** : Students of Civil or Mechanical Engineering

**INDUSTRIES APPLICABLE TO** : Civil or Mechanical Design companies like L&T, TCE, Atkins, General Electric, Rolls Royce, etc.

**COURSE OUTLINE :**

The theory of structural dynamics is introduced. The characteristics of Single Degree of Freedom Systems under dynamic loading are discussed in detail. Methods to evaluate the response of SDOF systems under various types of dynamic loading are taught. A brief introduction to Multi - DOF systems is also included.

**ABOUT INSTRUCTOR :**

Prof. Riya Catherine George, holds a PhD degree from IIT Kanpur, in Civil Engineering. She is presently working as Assistant Professor at Hiroshima University, Japan. She has four years of industry experience with General Electric, Aviation division as structural engineer.

**COURSE PLAN :**

- Week 1:** Introduction to structural dynamics,  
SDOF, Free vibration – Undamped and damped systems
- Week 2:** Forced Vibrations – Harmonic, Periodic,  
Arbitrary excitations
- Week 3:** Numerical evaluation of dynamic responses,  
Earthquake excitations
- Week 4:** Generalized SDOF systems,  
Introduction to Multi Degree of Freedom Systems