



INTRODUCTION TO MECHANICAL VIBRATION

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PRE-REQUISITES : Completed first year of B.E/B.Tech

INTENDED AUDIENCE : It is a Elective Course for UG students of Mechanical, Production, Automobile, Aerospace, Civil Engineering and equivalent.

COURSE OUTLINE :

Vibration is a common phenomenon occurring in a mechanical system. For example, vibration of a rotor due to unbalanced mass, vibration of a vehicle engine at varying speed. The study of a dedicated course is required to understand the fundamental and advance concepts of mechanical vibrations for engineers and designers. This course is of basic level. It introduces fundamentals of vibration, free and forced, undamped and damped vibration, vibration of single Degree of Freedom (DoF) system, 2-DoF and multi-DoF systems, theory of vibration absorbers and vibration instruments.

ABOUT INSTRUCTOR :

Prof. Anil Kumar works as an Assistant Professor faculty in the Department of Mechanical and Industrial Engineering at IIT Roorkee for more than four years. He teaches subjects like, Automatic Control, Machine Design, Vibrations and Noise, etc. to UG students. His research area belongs to semi-active rail suspension, modal identification of structures, testing of piping joints, pedestrian-structure interaction modelling.

COURSE PLAN :

Week1: Fundamental of Vibrations.

Week2: Free Vibration of Single Degree of Freedom Systems.

Week3: Forced Vibration of Single Degree of Freedom Systems.

Week4: Forced Vibration of Single Degree of Freedom Systems.

Week5: Vibration Measuring Instruments.

Week6: Vibration of Two Degree of Freedom Systems.

Week7: Vibration Absorbers and Critical Speed of Shafts.

Week8: Vibration of Multi Degree of Freedom Systems.