



INTRODUCTION TO MECHANICAL VIBRATION

PROF. ANIL KUMAR

Department of Mechanical Engineering
IIT Roorkee

TYPE OF COURSE : Rerun | Elective | UG

COURSE DURATION : 8 weeks (26 Jul' 21 - 17 Sep' 21)

EXAM DATE : 26 Sep 2021

PRE-REQUISITES : Completed first year of BE/BTech

INTENDED AUDIENCE : Graduate students in Mechanical Engineering and related fields.

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, vibration of single Degree of Freedom (DoF) system, 2-DoF and multi-DoF systems, continuous systems such as bars and beams, and whirling of shafts.

ABOUT INSTRUCTOR :

Dr Anil Kumar works as an Assistant Professor faculty in the Department of Mechanical and Industrial Engineering at IIT Roorkee for more than three 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 :

Week 1: Fundamental of Vibrations

Week 2: Free Vibration of Single Degree of Freedom Systems

Week 3: Forced Vibration of Single Degree of Freedom Systems

Week 4: Forced Vibration of Single Degree of Freedom Systems.

Week 5: Vibration Measuring Instruments.

Week 6: Vibration of Two Degree of Freedom Systems.

Week 7: Vibration Absorbers and Critical Speed of Shafts.

Week 8: Vibration of Multi Degree of Freedom Systems.