

DYNAMICS AND VIBRATIONS LAB

Description of the Laboratory:

The main purpose of the Dynamics and Vibrations Lab is to give practical exposure to the students who are indeed first step of planning theory of vibrations. The student is made to physically experience basic concepts such as normal mode vibrations, natural frequency, mode shapes, and different types of damping.

There is equipment such as Universal Vibration Test setup, pressure distribution in Journal bearing and Corioli's acceleration component which enable the student to do some advanced experiments.

Apart from the experiments on vibrations the lab is also equipped with Rotary and Reciprocating Balancing Machine, Gyroscope demonstration, Hartnel, Porter, Proell Governors, Whirling speed of shaft, Moment of Inertia determination, Bifilar and cam-follower experiments. It is planned to procure sophisticated experimental setups in the coming years.

List of Experiments:

- Determination of Gyroscopic couple on Motorized Gyroscope
- Determination of the unbalanced couple and forces in
 - Static and Dynamic Balancing
 - Balancing of Reciprocating Masses
- Determination of radius of gyration of a given compound pendulum
- Determination of the natural frequency of un-damped torsional vibration using single rotor shaft system
- Estimation of the frequency of damped force vibration of a spring mass system
- Determination of Natural frequency of bending vibration of cantilever beam using FFT analyzer
- Determination of pressure distribution in journal bearing
- Determination of moment of inertia of a flywheel
- Determination of the Corioli's Component of acceleration
- Determination of critical speed using Whirling of shaft
- Determination of characteristics of Universal Governor
- Study of Jump-Off phenomenon in a cam-follower mechanism

List of Equipment:

- Motorized Gyroscope
- Cam-follower equipment
- Corioli's component of acceleration
- Pressure distribution in Journal bearing
- Universal Governor setup
- Whirling speed of shaft equipment
- Rotary Balancing Instrument
- Reciprocating Balancing Instrument
- Universal Vibration test Setup
- Moment of Inertia of Flywheel
- Bifilar Instrument

Photographs of the Lab/Equipment:



Overview of Dynamics & Vibrations Lab



Universal Vibration Apparatus, Journal Bearing and Coriolis Component



Rotary and Reciprocating balancing Apparatus



Gyroscope, Cam and Follower and Governor