



KARUNYA INSTITUTE OF TECHNOLOGY AND SCIENCES
(Declared as Deemed to be University under Sec. 3 of the UGC Act 1956)
A CHRISTIAN MINORITY RESIDENTIAL INSTITUTION
AICTE Approved & NAAC Accredited
Karunya Nagar, Coimbatore - 641 114, Tamil Nadu, India

DEPARTMENT OF MECHANICAL ENGINEERING

DYNAMICS & VIBRATION LABORATORY

Dynamic & Vibration Laboratory is a modern facility for performing a wide range of experiments in the area of vibration. The Lab supports undergraduate courses, postgraduate courses, research scholars, student projects and advanced experimental research. Students working in the broad areas of structural dynamics have access to all available resources. The Mechanical Dynamic & Vibrations Laboratory provides opportunities for students to incorporate vibration analysis into the design, development, and optimization of products. Students use experimental modal analysis hardware and software for conducting design and analysis studies. The lab also provides tools for design projects, which involve concepts and applications in terms of dynamics, vibrations and controls. This laboratory equips students with the current industry practice in vibration based analysis and design of products.

COURSE OBJECTIVES:

To impart knowledge on

1. Fundamental principles of dynamics for mechanical systems.
2. Sensors, Signal conditioning, digital data acquisition and associated instrumentation for vibration.
3. Vibration measurement techniques.

COURSE OUTCOMES:

After completing the course the students will be able to

1. Demonstrate the principle and mechanism used in governor and gyroscope.
2. Recognize the undesirable effects of unbalances resulting from prescribed motions in mechanism.
3. Determine the critical speed of shaft under the given load conditions.
4. Perform balancing of rotating masses.
5. Adapt and evaluate the technique to measure vibration.
6. Understand the behaviour of vibration in simple mechanical systems.

Facilities available for regular class work, project, research and consultancy

- ✓ 4 channel FFT Analyzer (LMS make)
- ✓ Octave Analyzer(LMS)
- ✓ Acoustic Emission setup (Kistler)
- ✓ Vibration shaker setup and software (Hardware-LDS, Software-UCON)
- ✓ Impact Hammer (Dytran)
- ✓ Modal Analysis software (Dewesoft7)
- ✓ Vibrometer
- ✓ Microphone (GRAS)
- ✓ Uni-axial, Tri-axial accelerometers (Dytran)
- ✓ Force sensor (Dytran)
- ✓ Oscilloscope
- ✓ Data Acquisition Accessory
- ✓ Vibration Table

Major equipment's



Fig. 1 Vibration shaker setup (LDS make, UK)



Fig. 2 FFT Analyzer (LMS make, Germany)



Fig. 3 Vibrometer, sensors, Impact hammer (LDS make, UK)



Fig. 4 Acoustic emission setup (Kistler make, Switzerland)



Fig. 5 Vibration Table (Ratna controls, India)



Fig. 6 Damped and undamped torsional vibration



Fig. 7 Free and Forced vibration response in spring mass system



Fig. 8 Rotor balancing machine

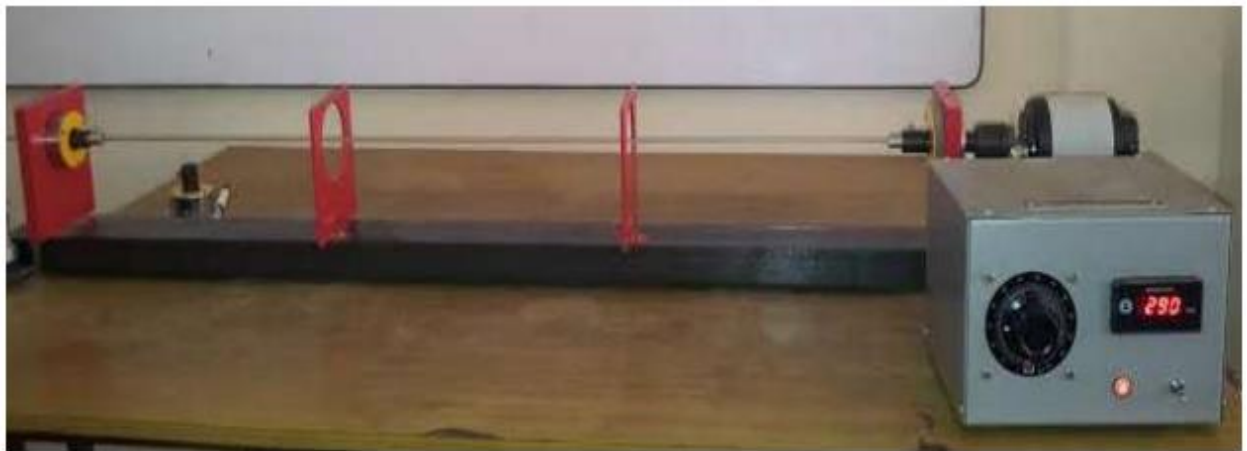


Fig. 9 Whirling of shaft



Fig. 10 Motorized Gyroscope & Cam analyzer

Lab in charge:

Dr. Lawrance G, M.Tech., Ph.D., Assistant Professor



Lab technicians:

Mr. J. Deva Manoharan, D.M.E., Engineering Technician

