

# GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 2

**Mechanical Engineering (CAD/CAM)**

Subject Name Vibration Engineering

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Sr.No	Course content
1.	Introduction to unwanted mechanical vibrations and their harmful effects including those on human beings.
2.	Experimental and theoretical routes to vibration engineering. Vibration Testing. Spatial, Modal and Response models of vibrating systems. Lumped parameter and distributed parameter modeling of mechanical vibratory systems.
3.	Free vibrations and Forced response solutions of Single and multi degree of freedom models including modeling of damping.
4	Distributed parameter models of rods, bars and beams.
5	Vibration control solutions: Balancing of rotating and reciprocating machines. Design of vibration isolators. Auxiliary mass systems including tuned dampers for vibration control.
6	Application of damping treatment for vibration control in machines and structures. Dynamic instability control.
7	Design of Accelerometers, Velometers.
8	Introduction to Modal Analysis, model updating and structural dynamic modification to improve dynamic design of machine structures. Active control of vibrations. Introduction to Noise Vibration Harshness and its control.
9	Vibration control strategies and case studies.

## REFERENCE BOOKS:

1. Mechanical Vibrations by Singiresu S. Rao, Pearson Education.
2. Mechanical Vibrations by Kshitij Gupta & J.S. Rao.
3. Mechanical Vibrations by W. Thomson