

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. SEMESTER: VI Aeronautical Engineering

Subject Name: **Vibration and Noise Control**

Subject Code: **160103**

Teaching Scheme				Evaluation Scheme		
Theory	Tutorial	Practical	Total	University Exam (Theory) (E)	Mid Sem Exam (Theory) (M)	Practical (I)
3	0	2	5	70	30	50

Sr. No.	Course Content	Total Hrs
1	Fundamental of Vibrations: Introduction, Definitions, Vector method of representing harmonic motions, Beats phenomenon, Complex method of representing harmonic vibrations, Work done by harmonic motion,	6
2	Undamped Free Vibrations of Single Degree of Freedom System Introduction, Derivation and solution of differential equation, Torsional vibrations, Equivalent stiffness of spring mass combinations, Energy method.	6
3	Damped Free Vibration of Single Degree of Freedom Systems: Introduction, Different types of damping, Free vibration with viscous damping, Logarithmic decrement, Viscous dampers, Coulomb damping, solid or structural damping, slip or interfacial damping.	6
4	Forced Vibrations of Single Degree of Freedom Systems: Introduction, Forced vibration with constant harmonic excitation, rotating & reciprocating unbalance and excitation of support. Types of Damping for forced vibration, Vibration isolation and transmissibility, Vibration measuring instruments.	6
5	Two degree of Vibration Systems: Introduction, Principal modes of vibration, combined rectilinear and angular modes, systems with damping, Vibration Absorber and Isolation.	6
6	Introduction Multi degree of freedom systems: Introduction, Free vibration equations of motion, Flexibility coefficient and Maxwell's theorem,	6
7	Lagrange's Equation : Virtual Work, Lagrange's Equation,	3
8	Vibration of continuous systems: Longitudinal vibration of Rods, Torsional vibration of Rods, Euler Equation for Beams.	6

Text Books:

1. Theory of Vibration with Applications by William T. Thomson & Marie Dillon Dahleh.
2. Mechanical Vibrations by G K Grover.

Reference Books:

1. Mechanical vibrations by V.P.Singh.
2. Vibration fundamentals & practice by Clarence DeSilva.
3. Mechanical vibrations by Singiresu S. Rao.
4. Vibration analysis by Rao V. Dukkipatti.