

GUJARAT TECHNOLOGICAL UNIVERSITY

MARINE ENGINEERING

B. E. SEMESTER: VII

Subject Name: **Mechanics of Machine- II**

Subject Code: **171802**

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	University Exam (E)		Mid Sem Exam (Theory) (M)	Practical (Internal)
				Theory	Practical		
2	1	0	3	70	30	30	20

Sr. No	Course Content	Total Hrs.
1.	Toothed gearing : Types of gears, condition for transmission of constant velocity; methods of avoiding interference; Transmission of power by gear trains on parallel shafts; Rack and pinion , Bevel gears, Worm and worm wheel, Spur gears Helical gears, Spiral gears; Epicyclic gear trains, Torque on gear trains, acceleration of gear trains.	04
2.	Balancing: Balancing of masses rotation in different planes, dynamic forces at bearings; Primary and secondary balance of multi-cylinder in-line Engines and configurations.	04
3.	Gyroscope : Gyroscopic couple. Vector representation to torque and angular movement, Steady rectangular precession, vector treatment; Steady conical precession; Motion involving steady precession; Application to Ship's stabilization.	04
4.	Free Harmonic Vibrations, Linear motion of an elastic system, Angular motion of an elastic System. Differential equation of motion. Free Vibration of springs in series and parallel. Simple and Compound pendulums. Single and two degrees of freedom.	04
5.	Torsional vibrations: Single rotor system, rotor at end and rotor in the middle. Effect of inertia of Shaft. Two rotor system, rotors at both ends and rotors at one end. Three rotor and multirotor system. Torsionally equivalent shafts, Geared system.	03

6.	Forced Vibrations : Forced Linear and angular Vibrations, Periodic force transmitted to support, periodic movement of the support.	03
7.	Transverse vibrations of beams: Single Concentrated load, effect of the mass of the beam, Energy method- several concentrated Loads uniformly distributed load, Dunkerley's empirical method for several Concentrated loads.	03
8.	Whirling of shafts: Whirling of shafts, critical speed, effect to slope of the disc, effect of end thrust.	02
9.	Damped vibrations: Idea of Viscous and Coulomb damping, Linear and angular vibrations with Viscous damping, Forced damped liner and angular Vibrations, Periodic movement of support.	03

Text Books:

1. Theory of machines By Thomas Bevan Tata Mc Graw Hill

Reference book:

1. Theory of Machines by S.S .Rattan Tata Mc Graw Hill