THEORY OF MACHINES LAB

Course Code	23ME3552	Year	III	Semester	I
Course Category	Professional Core	Branch	ME	Course Type	Lab
Credits	1.5	L-T-P	0-0-3	Prerequisites	nil
Continuous Internal Evaluation:	30	Semester End Evaluation:	70	Total Marks:	100

Strength of Correlation between CO – PO , CO- PSO in scale of 1-3- Course Articulation Matrix

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO-1	3	2	2	3						1			3
CO-2	3	2	2	3						1			3
CO-3	3	2	2	3						1			3
CO-4	3	2	2	3						1			3
CO-5	2	2	2	2						1			2

Course outcomes

At the end of the course, the student will be able to:		BTL
CO1	Get knowledge about the motion of a gyroscope	L3
CO2	Discuss the characteristics of governors	L2
CO3	Find the frequencies of damped and undamped free and forced vibrations	L4
CO4	Analyze different mechanisms	L4
CO5	Demonstrate various types of gears	L2

SYLLABUS

Experiment Number	Contents	Mapped CO
1	To determine whirling speed of shaft theoretically and experimentally	CO3
2	To determine the position of sleeve against controlling force and speed of a Hartnell governor and to plot the characteristic curve of radius of rotation	CO2
3	To analyze the motion of a motorized gyroscope when the couple is applied along its spin axis	CO1
4	To determine the frequency of undamped free vibration of an equivalent spring mass system.	CO3

5	To determine the frequency of damped force vibration of a spring mass system	CO3
6	To study the static and dynamic balancing using rigid blocks.	CO4
7	Determination of radius of gyration, a moment of inertia – bifilar suspension Method.	CO4
8	To plot follower displacement vs cam rotation for various Cam Follower systems	CO4
9	To plot slider displacement, velocity and acceleration against crank rotation for single slider crank mechanism/Four bar mechanism	CO4
10	To find the coefficient of friction between the belt and pulley	CO4
11	To study simple and compound screw jack and determine the mechanical advantage, velocity ratio, and efficiency	CO4
12	To study various types of gears- Spur, Helical, Worm and Bevel Gears	CO5

Learning Resources

Textbook(s):

1.Theory of Machines, (4th Edition) by S.S.Rattan ,TataMc.Graw Hill, New Delhi, 2014.

2. Mechanical vibrations, (4th edition) by Singiresu S. Rao Pearson education publications, Delhi, 2004.

References:

1. Theory of Machines, (5th Edition) by R.K.Bansal, Laxmi Publications(p) ltd. New Delhi, 2010