

THEORY OF MACHINES LABORATORY

VI Semester: ME								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
AME111	Core	L	T	P	C	CIA	SEE	Total
		-	-	3	2	30	70	100
Contact Classes: Nil		Tutorial Classes: Nil		Practical Classes: 36			Total Classes: 36	
<p>OBJECTIVES: The course should enable the students to:</p> <ol style="list-style-type: none"> I. Understand the basic principles of kinematics and the related terminology of machines. II. Discriminate mobility; enumerate links and joints in the mechanisms. III. Formulate the concept of analysis of different mechanisms. <p>COURSE OUTCOMES (COs):</p> <p>CO1: Understand principles of balancing of masses to various links, mechanisms and engines. CO2: Visualize the working principles of brakes and dynamometer CO3: Apply the concept of balancing of masses of rotating and reciprocating machine elements. CO4: Understand the principles of gyroscope and governors CO5: Ability to determine the vibration parameters of different systems</p> <p>COURSE LEARNING OUTCOMES (CLOs): The students should enable to:</p> <ol style="list-style-type: none"> 1. Understand basic units of measurement, convert units, and appreciate their magnitudes. 2. Utilize basic measurement techniques of theory of machines. 3. Perform kinematic analysis of mechanisms 4. Perform dynamic analysis of mechanisms 5. Calculate position, velocity, and acceleration of linkages 6. Calculate speed ratio of gear trains 7. Identify mechanisms in real life applications. 8. Perform kinematic analysis of simple mechanisms. 9. Perform static and dynamic force analysis of slider crank mechanism. 10. Determine moment of inertia of rigid bodies experimentally. 11. Determine the Gyroscope couple. 12. Determine the bearing life of Ball bearing. 								
LIST OF EXPERIMENTS								
Week-1	GOVERNORS							
To study the function of a Governor								
Week-2	GYROSCOPE							
To determine the Gyroscope couple.								
Week-3	STATIC FORCE ANALYSIS							
To draw free body diagram and determine forces under static condition.								
Week-4	DYNAMIC FORCE ANALYSIS							
To draw free body diagram and determine forces under dynamic condition.								
Week-5	BALANCING							
To determine balancing forces and reciprocating masses.								

Week-6	BEARINGS
To determine the bearing life.	
Week-7	VIBRATIONS
To determine the longitudinal and transfer vibration.	
Week-8	WHIRLING
To determine critical speed of a shaft.	
Week-9	MECHANISMS
To design various mechanism and their inversions	
Week-10	DIFFERENTIAL GEAR BOX
To study automobile differential gear box.	
Week-11	INDEXING
To study various intermittent mechanism.	
Week-12	EXAMINATIONS
Text Books:	
1 Joseph E. Shigley, "Theory of Machines and Mechanisms", Oxford University Press, 4 th Edition, 2010.	
2 Thomas Bevan, "Theory of Machines", Pearson, 3 rd Edition, 2009.	