

AEROSPACE STRUCTURAL DYNAMICS LABORATORY

VII Semester: AE								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
AAE113	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>COURSE OBJECTIVES: The course should enable the students to:</p> <p>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 Explore the new concepts of aerodynamics propulsion and fuel system integration</p> <p>COURSE LEARNING OUTCOMES (CLOs):</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	LONGITUDINAL AND LATERAL VIBRATIONS
To determine the longitudinal and transfer vibration.	
Week-8	VIBRATION ANALYSIS OF SHAFT
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	FREE AND FORCED VIBRATION OF CANTIEVER BEAM
To study Vibrations in beam Structures	
Week-12	EXAMINATIONS
Reference Books:	
<ol style="list-style-type: none"> 1. Joseph E. Shigley, —Theory of Machines and Mechanisms, Oxford University Press, 4th Edition, 2010. 2. Thomas Bevan, —Theory of Machines, Pearson, 3rd Edition, 2009. 	
Web References:	
<ol style="list-style-type: none"> 1. nptel.ac.in/courses/112104168/L13.pdf 2. www.compositesworld.com/blog/post/fabrication-methods 3. www.ae.iitkgp.ernet.in/ebooks/chapter3.html 4. www.auif.utcluj.ro/images/VOLUME12_3/10_Chandramohan_Murali_67_71 	