

DEPARTMENT OF MECHANICAL ENGINEERING

Aligarh Muslim University, Aligarh

Course Title	:	Kinematics and Stress Analysis Lab
Course Number	:	MEC3950
Credits	:	2
Course Category	:	DC
Pre-Requisites(s)	:	None
Contact Hours	:	0-1-2
Type of Course	:	Practical
Course Assessment	:	Course Work (Reports/Viva-Voce) 60% End Semester Examination (2 Hours) 40%

Course Objectives

1. Develop an understanding of the working of various machines and mechanism of common applications.
2. Apply scientific theories, mathematics and laws of mechanics in real life problem.
3. To be able to perform the kinematic analysis on various machines and stress analysis of various machine elements.

Course Outcomes

After taking this course students should be able to

1. Solve the problems related to the theory of elasticity, concepts of stress and strain, strength and stiffness, deformations and displacements, strain energy, and load carrying capacity.
2. Analyze flat and curved structures based on the principles of strain energy along with ability to carry out buckling analysis.
3. Solve statically indeterminate structures using standard methods and theorems.
4. Apply the principles of stress-strain in solving real industrial components like thick and thin pressure vessels.

List of Experiments

1. Observation of pressure profile in journal bearing.
2. To measure the strain in a cantilever beam of Aluminium by the means of Strain gauge.
3. To perform the tension and compression test for a mild steel rod and brick sample respectively using a Universal Testing Machine.
4. To determine the co-efficient of friction of lubricating oil used in the Thurston Pendulum Tester for friction test.
5. To draw follower's displacement, velocity and acceleration versus cam rotation angle curves for different cam and follower pairs.
6. Verification of gyroscopic torque equation.
7. Verification of the analytically determined positions of the balancing masses in a rotating mass system.
8. To find out the input, output and holding torque in an epicyclic gear train and verify the torque equation.
9. To perform Izod and Charpy impact test.

PO's		a	b	c	d	e	f	g	h	i	j	k
CO's	1	H	M	M	H	L	L					
	2	H	H	L	L							
	3	M	M	M	M	H		M				M
	4	M	H	L	M	M		L				L