ENGINEERING MECHANICS I LAB (ME- 113 L)

Pre-requisite: None
Credit Hours: 01
Contact Hours: 48

RECOMMENDED BOOK(S)

VectorMechanicsforEngineersbyBeerandJohnston
EngineeringMechanics(Statics)byJ.L. Meriam

REFERENCE BOOK(S)

Course objectives

To gainbasic understanding of various engineering structures inequilibrium.
To develop knowledge regarding physical phenomena in mathematicalterms

S. No.	CLO/PLOS MAPPING	DOMAIN	PLO
1	**Conduct** experiments and find out unknowns such as forces, moments, positions and velocities etc.	P4	04
2	**Analyze** the theoretical values of variables of concern and **compare** them with experimental values	C3	04
3	**Contribute** effectively as an individual member of a team	A2	09

COURSE CONTENTS

To verify the principle of moments, which states that if a number of co-planar forces acting on a body, keep it in equilibrium and their moments are taken about any point in their pale, the sum of the clockwise moments is equal to the sum of the anticlockwise moments.
To determine the reaction of a beam under various loadings.
To verify the laws of friction between solid bodies and to find the coefficient of friction between wool and various other materials.
To find the tension in various parts of a hanging rope loaded at various points with various loadings.
To verify the law connecting the coefficient of friction between a cord and drum and angle of lap.
To resolve, by experiment, by suitable combination of three static, coplanar forces.
To compare the results with the graphical solution obtained by drawing triangle of forces diagram.
To illustrate the "resultant of two of the forces and to compare the magnitude and direction of its equal and opposite "equilibrant" with the experimental values.
If a system is in equilibrium under several co-planar concurrent forces:
the forces on their free vectors must form a closed polygon

To verify the condition of (a) $\sum Fx = 0$ (b) $\sum Fy = 0$

Determine the forces acting in the members of a roof truss.

To determine the forces acting in the tie and the jib of simple jib (wall) crane.

To verify Hook's law for helical springs and to find their stiffness

To find the modulus of rigidity of helical springs using various spring balances.

To find the tension in various parts of a hanging rope loaded at various points with uniform loading conditions.