

Course Type	Course Code	Name of Course	L	T	P	Credit
DSC2	NMEC102	Engineering Mechanics Lab	0	0	2	1

Course Objective

This course deals with understanding, verification and practical applications of basic principles of engineering mechanics.

Learning Outcomes

On successful completion of this course, students will learn:

- Graphical Verification of some basic principles of Engineering Mechanics.
- Gain insights into working principles of basic machines like pulley, wedge, screws etc.
- Software approach of tackling practical problems in Mechanics of Rigid Bodies

Unit No.	Topics to be Covered	Laboratory	Learning Outcome
1	Verification of polygon law of forces for equilibrium of rigid bodies using graphical method	1	To develop an insight into graphical methods for solving the equilibrium of rigid bodies.
2	To determine the coefficient of friction between two selected surfaces.	1	Understanding the angle of repose and its relationship with the coefficient of friction.
3	To find out the efficiency of a screw jack during raising and lowering.	1	Conceptualizing the screw as a wedge.
4	Understanding belt-friction using belt friction apparatus.	1	To understand belt-friction in the case of ropes wrapped around rigid surfaces.
5	To obtain the radius of gyration of rigid bodies using compound pendulum method.	1	Understanding the procedure for estimating radius of gyration of arbitrary shaped rigid bodies.
6	Investigation of mass moments of inertia in rotating rigid bodies	1	To study the mass moment of inertia as a function of the radius of rotating bodies.
7	Computational Simulation of a rigid disk in a rotating frame of reference.	1	Understanding the principle of conservation of energy and angular momentum of a rigid body.
8	Force-Couple relationship for maintaining the equilibrium of an engine system using Virtual Work Method.	1	Application of virtual work method to real life system.
9	To obtain the range of movement of a ventilation door actuated by a linear actuator.	1	Understanding the use of multi-force members in frames and machines.
10	Project Work- Using computer simulation of real-life problem of Rigid Body Mechanics	1	Students will learn the computer-oriented approach to mechanics problem.

Text Books / References:

1. Engineering Mechanics by Meriam and Kraige, sixth edition, John-Wiley and Sons.
2. Vector Mechanics for Engineers by Beer and Jhonston, eighth edition, TMH.

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