Statics & Dynamics

Course Code: BEB307 **Credit: 04 (L-3, T-1, P-0)**

Contact Hours: 60 **MM: 100**

Course Objectives:

1- Acknowledge to student about the Law of Forces.
2-To provide the concept of velocity and acceleration of a moving particle.
3-To make able to distinguish between Radial and Transverse velocity and acceleration.
4-To make them clear about Simple Harmonic Motion and Earth attraction.

Course Outline:

Analytic condition of equilibrium for coplanar forces. Equation of the resultant force. Common catenary, Centre of gravity, Virtual work. Wrenches, Null line and null plane.

Rotation of a vector in a plane. Radial and transverse velocity & acceleration, Tangential and Normal velocity and acceleration. Simple harmonic motion, Motion under other laws of forces, Earth attraction, Motion in resisting medium. Central orbits and Motion of a particle in three dimensions Kepler's laws of motion.

Course Outcomes:

After completing the course, students will be able to:

1. Understand various concept of work, force and Gravity.
2. Analyze the Radial and Transverse and Tangential and normal velocity and acceleration.
3. Identify the difference between Simple Harmonic motion and Motion under other laws.
4. Understand the Kepler's laws of Motion.
5. Evaluate the Virtual work.
6. Solve the centre of gravity concept.

Recommended Books:

1. R.S. Verma - A Text Book on Statics,Pothishala Pvt. Ltd., Allahabad.
2. S.L. Loney - An Elementary Treatise on the Dynamics of a Particle and of Rigid Bodies, Kalyani Publishers, New Delhi.
3. J.L. Synge&B.A. Griffith - Principles of Mechanics, Tata McGraw-Hill,1959.

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