

S1. No	Subject Code	Subject Name	Hours per Week			Total Hrs	Total Credits
			L	T	P		
1	EN2ES02	ENGINEERING MECHANICS	3	1	2	6	5

Unit I

Force and Moment: Definition, Units, Different Types of Forces, Resolution of Forces, Law of Parallelogram of Forces, Resultant of two or more Forces, Basic Conditions of Equilibrium, Lami's Theorem (No Proof), Jib Crane, Law of Polygon of Forces (Only Statement), Moment-Definition, Units & Sign Convention, Principle of Moments, Application of Equilibrium Conditions for non-concurrent Forces, Application of Principles of Forces & Moments: Levers & their Types, Reactions of Simply Supported Beams (Graphical & Analytical Method), Steel Yard, Lever Safety Valve, Foundry Crane, Simple Machines: Basic Concepts, Loss in Friction, Inclined Plane, Simple & Differential Wheel and Axle (Neglecting Rope thickness), Screw Jack, Lifting Crabs, Systems of Pulleys, Worm and Worm Wheel

Unit II

Work, Power and Energy: Work Done by a Constant Force, Work Done by Uniform Variable Force, Power, Indicated Power, Brake Power, Efficiency, Power required for an Engine on Horizontal and Inclined (smooth and rough) Planes, Energy, Potential Energy, Kinetic Energy of Rectilinear Motion, Kinetic energy of Circular Motion

Unit III

Centre of Gravity and Moment of Inertia: Concept, Centroid, Calculation of C.G. of Regular Bodies, Calculation of C.G. of Plain Geometrical Figures, Moment of Inertia.

Unit IV

Impact and Collision: Concept, Impulse and Impulsive Force, Law of Conservation of Momentum, Collision Between Two Rigid Bodies, Newton's Experimental Law of Collision, Coefficient of Restitution.

Unit V

Friction and Transmission of Power:

Friction: Types of Friction, Laws of Friction, Angle of Friction, Angle of Repose, Friction on Horizontal and Inclined Plains, Application of Laws of Friction Related to Wedge, Ladder and Screw Jack.

Transmission: introduction, types of power transmission devices, gear, chain, belt drives, ropes and their efficiency.

Reference Books:

1. Applied mechanics by S. B. Junnarkar, edition 17th, publisher- Charotar Publishing House Pvt. Ltd. 17th

2. Fundamentals of Applied Mechanics by Dadhe, Jamdar and Walawalkar, Publisher - Sarita Prakashan
3. Polytechnic Applied Mechanics. H.L Agrawal, Saroj Prakashan.
4. Applied Mechanics S. Ramamurtham Dhanpat Rai pub.
5. Applied Mechanics M.M. Malhotra & Subramanian New age International.
6. Applied Mechanics R.K. Rajput Laxmi Publications.

Engineering Mechanics Practical List

1. Use of Engineering Calculator.
2. Verification of the Law of Parallelogram and Polygon of Forces-By using Force Board, By using Force Table
3. Verification of the Principle of Moments in case of-Compound Lever, Bell crank Lever
4. Determination of Reactions in Case of Simply Supported Beams.
5. To Determine Coefficient of Friction between two Surfaces on- Horizontal Plane, Inclined Plane.
6. Determination of Mechanical Advantage, Velocity Ratio and Efficiency of Simple Wheel and Axle.
7. Determination of Mechanical Advantage, Velocity Ratio and Efficiency of differential Wheel and Axle.
8. Determination of Mechanical Advantage, Velocity Ratio and Efficiency of Single Purchase Crab.
9. Determination of Mechanical Advantage, Velocity Ratio and Efficiency of Double Purchase Crab.
10. Determination of Mechanical Advantage, Velocity Ratio and Efficiency of Worm and Worm Wheel.
11. Determination of Mechanical Advantage, Velocity Ratio and Efficiency of Screw Jack.
12. Study of transmission devices, gear drive, belt drive etc.