

LESSON PLAN (Summer-2026)

VENUS GROUP OF EDUCATIONAL & RESEARCH INSTITUTES, BAHANAGA, BALASORE-756042

Discipline: Mechanical Engg.	Semester: 2nd	Name of the Teaching Faculty: Laxmi Kanta Das
Subject: Engineering Mechanics	No. of days per week class allotted:4	Semester from date: 09.01.2026 To date: 08.05.2026 No. of Weeks: 17
Week No.	Class Day	Theory/Practical Topics
1st	1st	Discussion of Subjects, Syllabus, Time tables, Reference Books etc...
2nd	1st	Unit – I Basics of mechanics and force system
	2nd	Significance and relevance of Mechanics, Applied mechanics, Statics, Dynamics.
	3rd	Space, time, mass, particle, flexible body and rigid body. Scalar and vector quantity, Units of measurement (SI units)
3rd	1st	Fundamental units and derived units.
	2nd	Force – unit, representation as a vector and by Bow's notation, characteristics and effects of a force
	3rd	Principle of transmissibility of force, Force system and its classification.
	4th	Resolution of a force - Orthogonal components of a force, moment of a force, Varignon's Theorem.
4th	1st	Composition of forces – Resultant, analytical method for determination of resultant for concurrent,
	2nd	Solved Simple Problems
	3rd	non-concurrent and parallel co-planar force systems – Law of triangle, parallelogram and polygon of forces.
	4th	Unit– II Equilibrium
5th	1st	Equilibrium and Equilibrant, Free body and Free body diagram, Analytical and graphical methods of analysing equilibrium
	2nd	Lami's Theorem – statement and explanation, Application for various engineering problems.
	3rd	Solved Simple Problems
6th	1st	Solved Simple Problems
	2nd	Types of beam, supports (simple, hinged, roller and fixed) and loads acting on beam (vertical and inclined point load, uniformly distributed load, couple),
	3rd	Types of beam, supports (simple, hinged, roller and fixed) and loads acting on beam (vertical and inclined point load, uniformly distributed load, couple),
	4th	Beam reaction for cantilever, simply supported beam with or without overhang – subjected to combination of Point load and uniformly distributed load.
7th	1st	Beam reaction for cantilever, simply supported beam with or without overhang – subjected to combination of Point load and uniformly distributed load.
	2nd	Beam reaction graphically for simply supported beam subjected to vertical point loads only.
	3rd	Solved Simple Problems
	4th	Unit– III Friction

8th	1st	Friction and its relevance in engineering, types and laws of friction,
	2nd	limiting equilibrium, limiting friction, co-efficient of friction, angle of friction, angle of repose,
	3rd	relation between co-efficient of friction and angle of friction.
	4th	Equilibrium of bodies on level surface subjected to force parallel and inclined to plane.
9th	1st	Equilibrium of bodies on inclined plane subjected to force parallel to the plane only.
	2nd	Solved Simple Problems
	3rd	Solved Simple Problems
	4th	Unit– IV Centroid and centre of gravity
10th	1st	Centroid of geometrical plane figures (square, rectangle, triangle, circle, semi-circle, quarter circle)
	2nd	Centroid of composite figures composed of not more than three geometrical figures
	3rd	Centroid of composite figures composed of not more than three geometrical figures
	4th	Centre of Gravity of simple solids (Cube, cuboid, cone, cylinder, sphere, hemisphere)
11th	1st	Centre of Gravity of simple solids (Cube, cuboid, cone, cylinder, sphere, hemisphere)
	2nd	Centre of Gravity of composite solids composed of not more than two simple solids.
12th	1st	Centre of Gravity of composite solids composed of not more than two simple solids.
	2nd	Solved Simple Problems
	3rd	Solved Simple Problems
	4th	Unit – V Simple lifting machine
13th	1st	Simple lifting machine, load, effort, mechanical advantage, applications and advantages.
	2nd	Simple lifting machine, load, effort, mechanical advantage, applications and advantages.
	3rd	Velocity ratio, efficiency of machines, law of machine.
	4th	Ideal machine, friction in machine, maximum Mechanical advantage
14th	1st	efficiency, reversible and non-reversible machines
	2nd	conditions for reversibility
	3rd	Velocity ratios of Simple axle and wheel
	4th	Solved Simple Problems
15th	1st	Differential axle and wheel
	2nd	Solved Simple Problems
	3rd	Worm and worm wheel,
	4th	Solved Simple Problems
16th	1st	Single purchase and double purchase crab winch
	2nd	Solved Simple Problems
	3rd	Simple screw jack
	4th	Solved Simple Problems
17th	1st	Weston's differential pulley block
	2nd	Solved Simple Problems
	3rd	geared pulley block.
	4th	Solved Simple Problems