

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (2026-27)

TH-7 Engineering Mechanics (COURSE CODE: TH -7)

Discipline: ALL BRANCH	1 ST Year	No. of periods available: 64	Name of the Teaching Faculty : SUDHIR KUMAR MAHAPATRA
Subject: Engineering Mechanics	No. of days/per week class allotted:2p/week		Semester From: No. of Weeks: 32 weeks
Week	Class Day		Theory Topics
1	1 st	1.	Introduction to Mechanics: , Statics, Dynamics, Space, time, mass, particle Significance, relevance, flexible body, rigid body
	2 nd	2.	Scalar & Vector quantities, Units of measurement (SI units), Fundamental & derived units
2	1 st	3.	Force – unit, representation as vector, Bow's notation
	2 nd	4.	Characteristics & effects of force, Principle of transmissibility of force
3	1 st	5.	Force system & its classification
	2 nd	6.	Resolution of a force - Orthogonal components of a force
4	1 st	7.	Moment of a force, Law of moment, Varignon's Theorem
	2 nd	8.	Couple and its moment
5	1 st	9.	Composition of forces, Resultant force
	2 nd	10.	Analytical method for determination of resultant (Concurrent force system)
6	1 st	11.	Analytical method (Non-concurrent & Parallel co-planar force system)
	2 nd	12.	Triangle Law, Polygon Law (Statement), Parallelogram Law (Statement & Derivation)
7	1 st	13.	Numerical Problems on Force System
	2 nd	14.	Numerical Problems on Force System (Continued)
8	1 st	15.	CLASS TEST - 1 (Unit 1 & Unit 2)
	2 nd	16.	Equilibrium & Equilibrant, Condition of Equilibrium
9	1 st	17.	Free body & Free body diagram
	2 nd	18.	Analytical & Graphical methods of analyzing equilibrium
10	1 st	19.	Lami's Theorem – Statement & Explanation
	2 nd	20.	Application of Lami's Theorem for engineering problems
11	1 st	21.	Numerical Problems on Equilibrium & Lami's Theorem
	2 nd	22.	Beam: Types of Loads, Beam, Supports with their Reactions (with neat sketch)
12	1 st	23.	Numerical Problems on Beam Reactions
	2 nd	24.	CLASS TEST - 2 (Unit 3)
13	1 st	25.	Friction and its relevance in engineering, Types of friction
	2 nd	26.	Laws of friction, Limiting equilibrium, Limiting friction, Co-efficient of friction
14	1 st	27.	Angle of friction, Angle of repose, Relation between co-efficient of friction & angle of friction
	2 nd	28.	Numerical Problems on Friction
15	1 st	29.	Equilibrium of bodies on level surface (Force parallel & inclined to plane)
	2 nd	30.	Equilibrium of bodies on inclined plane (Force parallel to the plane only)

16	1 st	31.	Ladder Friction
	2 nd	32.	Numerical Problems on Ladder Friction & Equilibrium on inclined plane
17	1 st	33.	CLASS TEST - 3 (Unit 4)
	2 nd	34.	Centroid: Definition, Centroid of plane figures (Square, Rectangle, Triangle)
18	1 st	35.	Centroid of Circle, Semicircle, Quarter circle
	2 nd	36.	Centroid of composite figures (not more than three geometrical figures)
19	1 st	37.	Locate centroid of C, I, L and T Section
	2 nd	38.	Centre of Gravity (C.G.): Definition, C.G. of simple solids (Cube, Cuboid, Cone, Cylinder, Sphere, Hemisphere) - Expressions only
20	1 st	39.	Numerical Problems on Centroid & C.G.
	2 nd	40.	CLASS TEST - 4 (Unit 5)
21	1 st	41.	Moment of Inertia (M.I.): Definition, M.I. of Plane Figures (Rectangle, Square, Triangle, Circle, Semicircle) - Expressions only
	2 nd	42.	Parallel Axis Theorem (Statement & Proof)
22	1 st	43.	Perpendicular Axis Theorem (Statement & Proof)
	2 nd	44.	Determination of M.I. of Composite Section (I and T-Section)
23	1 st	45.	Numerical Problems on Moment of Inertia
	2 nd	46.	CLASS TEST - 5 (Unit 6)
24	1 st	47.	Simple lifting machine: Load, Effort, Mechanical Advantage, Velocity Ratio (V.R.), Efficiency, Applications & advantages
	2 nd	48.	Law of machine, Ideal machine, Friction in machine, Maximum MA & Efficiency
25	1 st	49.	Reversible & Non-reversible machines, Conditions for reversibility
	2 nd	50.	Simple Axle and Wheel, Differential Axle and Wheel - MA, VR & Efficiency
26	1 st	51.	Worm and worm wheel - MA, VR & Efficiency
	2 nd	52.	Single purchase & Double purchase crab winch - MA, VR & Efficiency
27	1 st	53.	Simple Screw Jack - MA, VR & Efficiency
	2 nd	54.	1st, 2nd and 3rd System of Pulleys - MA, VR & Efficiency
28	1 st	55.	Numerical Problems on Simple Lifting Machines
	2 nd	56.	Numerical Problems on Simple Lifting Machines (Continued)
29	1 st	57.	Gear, Gear Drive, Types of Gear Drive
	2 nd	58.	Gear Train, Types of Gear Train
30	1 st	59.	Velocity Ratio of Simple and Compound Gear Train
	2 nd	60.	Numerical Problems on Simple and Compound Gear Train

31	1 st	61.	CLASS TEST - 6 (Unit 7 & Unit 8)
	2 nd	62.	Doubt Clearing / Revision Session
32	1 st	63.	Doubt Clearing / Revision Session
	2 nd	64.	Doubt Clearing / Revision Session

Signature of Teaching Faculty

