



## Orissa School of Mining Engineering Keonjhar

<b>Subject: Engineering Mechanics (TH 4(b))</b>			
<b>Discipline: Metallurgical Engineering (Sec-4)</b>		<b>Name of the Faculty: Barun Kumar Barik</b>	
<b>Course Code:</b>	<b>Th.4(b)</b>	<b>Semester:</b>	<b>2nd</b>
<b>Total Periods:</b>	<b>60</b>	<b>Examination:</b>	<b>2026 summer</b>
<b>Theory Periods:</b>	<b>4P/W</b>	<b>Class Test:</b>	<b>30</b>
<b>Maximum Marks:</b>	<b>100</b>	<b>End Semester Examination:</b>	<b>70</b>

### Department of Mechanical Engineering

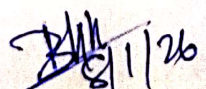
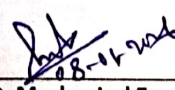
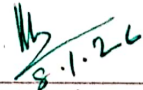
### Lesson Plan w.e.f 09.01.2026 TO 08.05.2026

Month	Day	Availability of classes	Class Day	Theory Topics
JAN	1st	02	9/01/2026	<b>Unit – I Basics of mechanics and force system</b> Significance and relevance of Mechanics, Applied mechanics, Statics, Dynamics.
			09/01/2026	Space, time, mass, particle, flexible body and rigid body.
	2nd	02	12/01/2026	Scalar and vector quantity, Units of measurement (SI units) - Fundamental units and derived units.
			12/01/2026	Force – unit, representation as a vector and by Bow's notation.
	3rd	02	16/01/2026	characteristics and effects of a force, Principle of transmissibility of force.
			16/01/2026	Force system and its classification and numerical.
	4th	02	19/01/2026	Resolution of a force - Orthogonal components of a force.
			19/01/2026	moment of a force, Varignon's Theorem.
	5th	02	30/01/2026	Composition of forces – Resultant, analytical method for determination of resultant for concurrent.
			30/01/2026	non-concurrent and parallel co-planar force systems – Law of triangle, parallelogram.
FEB	6th	02	2/02/2026	non-concurrent and parallel co-planar force systems –polygon of forces.  Topic end, Question answer discussion, Assignment 1
			2/02/2026	<b>Unit– II Equilibrium</b> Equilibrium and Equilibrant, Free body.
	7th	02	6/02/2026	Free body diagram, Analytical and graphical methods of analyzing equilibrium.
			6/02/2026	Lami's Theorem – statement and explanation, Application for various engineering problems.

	8th	02	9/02/2026	Lami's Theorem solving simple numerical problem.	
			9/02/2026	Types of beam, supports (simple, hinged, roller and fixed)	
	9th	02	13/02/2026	loads acting on beam (vertical and inclined point load)	
			13/02/2026	loads acting on beam uniformly distributed load, couple)	
	10th	02	16/02/2026	Beam reaction for cantilever, simply supported beam with or without overhang – subjected to combination of Point load	
			16/02/2026	Beam reaction for cantilever, simply supported beam with or without overhang– uniformly distributed load.	
	11st	02	20/02/2026	Beam reaction graphically for simply supported beam subjected to vertical point loads only.	
			20/02/2026	Solving numerical problem. Topic end, Question answer discussion, Assignment 2	
	12nd	02	23/02/2026	CLASS TEST- 1	
			23/02/2026	<b>Unit– III Friction-</b> Friction and its relevance in engineering, types and laws of friction.	
	13rd	02	27/02/2026	limiting equilibrium, limiting friction, co-efficient of friction.	
			27/02/2026	angle of friction, angle of repose, relation between co-efficient of friction and angle of friction.	
	MARCH	14th	02	2/03/2026	INTERNAL ASSESSMENT
				2/03/2026	Equilibrium of bodies on level surface subjected to force parallel and inclined to plane.
15th		02	6/03/2026	Solving numerical problem.	
			6/03/2026	Equilibrium of bodies on inclined plane subjected to force parallel to the plane only.	
16th		02	9/03/2026	Solving numerical problem. Topic end, Question answer discussion, Assignment 3	
			9/03/2026	<b>Unit– IV Centroid and centre of gravity</b> Centroid of geometrical plane figures (square, rectangle, triangle, circle, semi-circle, quarter circle)	
17th		02	13/03/2026	Centroid of composite figures composed of not more than three geometrical figures	
			13/03/2026	Centre of Gravity of simple solids (Cube, cuboid, cone, cylinder, sphere, hemisphere)	
18th		02	16/03/2026	Centre of Gravity of composite solids composed of not more than two simple solids	
			16/03/2026	Solving numerical problem.	
19th		02	20/03/2026	Solving numerical problem. Topic end, Question answer discussion, Assignment 4	

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		20/03/2026	CLASS TEST 2	
20th	02	23/03/2026	<b>Unit – V Simple lifting machine</b> Simple lifting machine, load, effort, mechanical advantage, applications and advantages.	
		23/03/2026	Velocity ratio, efficiency of machines.	
21st	02	30/03/2026	law of machine, ideal machine	
		30/03/2026	Solving numerical problem.	
22nd	02	6/04/2026	friction in machine, maximum Mechanical advantage and efficiency.	
		6/04/2026	reversible and non-reversible machines.	
23rd	02	10/04/2026	conditions for reversibility and numerical.	
		10/04/2026	Velocity ratios of Simple axle and wheel, and numerical.	
24th	02	13/04/2026	Velocity ratios of Differential axle and wheel, and numerical.	
		13/04/2026	Velocity ratios of Worm and worm wheel and numerical.	
25th	02	17/04/2026	Velocity ratios of Single purchase crab winch and numerical.	
		17/04/2026	Velocity ratios of double purchase crab winch and numerical.	
26th	02	20/04/2026	Velocity ratios of Simple screw jack and numerical	
		20/04/2026	Weston's differential pulley block	
27th	02	24/04/2026	Weston's geared pulley block. Topic end, Question answer discussion, Assignment 5	
		24/04/2026	CLASS TEST 3	
28th	02	27/04/2026	REVISION	
		27/04/2026	REVISION	
MAY	29th	02	4/05/2026	REVISION
	30th	02	8/05/2026	VST

 <b>Prepared by</b> <b>Er Barun Kumar Barik</b>	 <b>HOD, Mechanical Engg</b> <b>OSME, Keonjhar</b>	 <b>Principal</b> <b>OSME, Keonjhar</b>
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