NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)

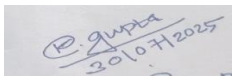
LESSON PLAN

SUBJECT: ENGINEERING MECHANICS(TH-4)

Name Of The Faculty :- Er. KANHAI GUPTA
Branch :-EE/EEE **Semester :-** 1st
Session :- 2025-26 **Examination :-** 2025 (W)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of periods actually needed
1	Unit – I Basics of mechanics and force system	15
2	Unit– II Equilibrium	12
3	Unit– III Friction	10
4	Unit– IV Centroid and centre of gravity	15
5	Unit – V Simple lifting machine	16
	Total Period:	68



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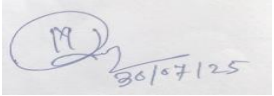

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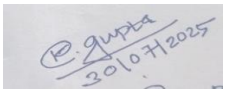
Name of the programme: Diploma in electrical and Electrical & Electronics Engineering	**Semester:** 1st	**Name of the Teaching Faculty:** Er. KANHAI GUPTA	
		Academic session : 2025-26 **Examination :** 2025 (W)	
Course Code:TH 4(b)	**Course Year:** First Year	**No. of Classes Alloted Per Week :**	4
		Planned Classes Required to Complete the Course	68
1st	**1st**	**Basics of mechanics and force system** Significance and relevance of Mechanics, Applied mechanics, Statics, Dynamics.	
	2nd	Space, time, mass, particle, flexible body and rigid body.	
	3rd	Scalar and vector quantity, Units of measurement (SI units) - Fundamental units and derived units	
	4th	Scalar and vector quantity, Units of measurement (SI units) - Fundamental units and derived units	
2nd	**1st**	Force – unit, representation as a vector and by Bow's notation,	
	2nd	characteristics and effects of a force, Principle of transmissibility of force,	
	3rd	Force system and its classification.	
	4th	Resolution of a force - Orthogonal components of a force	
3rd	**1st**	moment of a force, Varignon's Theorem.	
	2nd	Composition of forces – Resultant, analytical method for determination of resultant for concur- rent, non-concurrent and parallel co-planar force systems –	
	3rd	Composition of forces – Resultant, analytical method for determination of resultant for concur- rent, non-concurrent and parallel co-planar force systems –	
	4th	Composition of forces – Resultant, analytical method for determination of resultant for concur- rent, non-concurrent and parallel co-planar force systems –	
4th	**1st**	Law of triangle, parallelogram and polygon of forces.	
	2nd	Law of triangle, parallelogram and polygon of forces.	
	3rd	Law of triangle, parallelogram and polygon of forces.	
	4th	**Equilibrium** Equilibrium and Equilibrant, Free body and Free body diagram	
5th	**1st**	Analytical and graphical meth- ods of analysing equilibrium	
	2nd	Lami's Theorem – statement and explanation, Application for various engineering problems.	
	3rd	Lami's Theorem – statement and explanation, Application for various engineering problems.	
	4th	Types of beam, supports (simple, hinged, roller and fixed) and loads acting on beam (vertical and inclined point load, uniformly distributed load, couple)	
6th	**1st**	Types of beam, supports (simple, hinged, roller and fixed) and loads acting on beam (vertical and inclined point load, uniformly distributed load, couple)	

Week	Class Day	Topics to be Covered
6th	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 overhangsubjected 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	REVISION
	4th	**Friction** Friction and its relevance in engineering, co-efficient of friction,
8th	1st	Friction and its relevance in engineering, co-efficient of friction,
	2nd	Types and laws of friction, limiting equilibrium, limiting friction,
	3rd	co-efficient of friction, angle of friction.
	4th	Angle of repose, relation between co-efficient of friction and angle of friction.
9th	1st	Equilibrium of bodies on level surface subjected to force parallel and inclined to plane.
	2nd	Equilibrium of bodies on level surface subjected to force parallel and inclined to plane.
	3rd	Equilibrium of bodies on inclined plane subjected to force parallel to the plane only.
	4th	Equilibrium of bodies on inclined plane subjected to force parallel to the plane only.
10th	1st	REVISION
	2nd	**Centroid and centre of gravity** Centroid of geometrical plane figures (square, rectangle, triangle, circle, semi-circle, quarter circle)
	3rd	Centroid and centre of gravity Centroid of geometrical plane figures (square, rectangle, triangle, circle, semi-circle, quarter circle)
	4th	Centroid and centre of gravity Centroid of geometrical plane figures (square, rectangle, triangle, circle, semi-circle, quarter circle)
11th	1st	Centroid and centre of gravity Centroid of geometrical plane figures (square, rectangle, triangle, circle, semi-circle, quarter circle)

Week	Class Day	Topics to be Covered
11th	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	Centroid of composite figures composed of not more than three geometrical figures
12th	1st	Centroid of composite figures composed of not more than three geometrical figures
	2nd	Centre of Gravity of simple solids (Cube, cuboid, cone, cylinder, sphere, hemisphere) Centre of Gravity of composite solids composed of not more than two simple solids
	3rd	Centre of Gravity of simple solids (Cube, cuboid, cone, cylinder, sphere, hemisphere) Centre of Gravity of composite solids composed of not more than two simple solids
	4th	Centre of Gravity of simple solids (Cube, cuboid, cone, cylinder, sphere, hemisphere) Centre of Gravity of composite solids composed of not more than two simple solids
13th	1st	Centre of Gravity of simple solids (Cube, cuboid, cone, cylinder, sphere, hemisphere) Centre of Gravity of composite solids composed of not more than two simple solids
	2nd	Centre of Gravity of simple solids (Cube, cuboid, cone, cylinder, sphere, hemisphere) Centre of Gravity of composite solids composed of not more than two simple solids
	3rd	Centre of Gravity of simple solids (Cube, cuboid, cone, cylinder, sphere, hemisphere) Centre of Gravity of composite solids composed of not more than two simple solids
	4th	REVISION
14th	1st	**Simple lifting machine** Simple lifting machine, load, effort
	2nd	Simple lifting machine, load, effort
	3rd	mechanical advantage, applications and advantages.
	4th	Velocity ratio, efficiency of machines, law of machine.
15th	1st	Velocity ratio, efficiency of machines, law of machine.
	2nd	Velocity ratio, efficiency of machines, law of machine.
	3rd	REVISION
	4th	Ideal machine, friction in machine, maximum Mechanical advantage and efficiency, reversible and non-reversible machines, conditions for reversibility
16th	1st	Ideal machine, friction in machine, maximum Mechanical advantage and efficiency, reversible and non-reversible machines, conditions for reversibility

Week	Class Day	Topics to be Covered
16th	2nd	Ideal machine, friction in machine, maximum Mechanical advantage and efficiency, reversible and non-reversible machines, conditions for reversibility
	3rd	Velocity ratios of Simple axle and wheel, Differential axle and wheel, Worm and worm wheel, Single purchase and double purchase crab winch
	4th	Velocity ratios of Simple axle and wheel, Differential axle and wheel, Worm and worm wheel, Single purchase and double purchase crab winch
17th	1st	Simple screw jack, Weston's differential pulley block, geared pulley block.
	2nd	Simple screw jack, Weston's differential pulley block, geared pulley block.
	3rd	REVISION
	4th	REVISION



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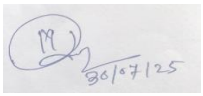

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