

# GOVT.POLYTECHNIC, GAJAPATI, PARALAKHEMUNDI

## Academic Lesson Plan for Summer Semester- 2025-26

Name of the Teaching Faculty: Er. Aswin Pradhan

Semester: 2<sup>nd</sup>

No. of Periods per Week: 04

End Semester Exam: 70

Total Marks: 100

Semester from Date: 09/01/2026

No. of weeks: 15

Department: Mechanical Engineering

Subject: ENGG. MECHANICS

Total Periods: 60

Progressive Assessment: 30

Theory – 4(b)

To Date: 08/05/2026

W.e.f: 09/01/2026 (15 Weeks)

Sl. No.	Week	Period	Topic to be covered
1.	1 <sup>st</sup>	1 <sup>st</sup>	Introduction to Mechanics, Significance and relevance of Mechanics, Applied mechanics, Statics, Dynamics
2.		2 <sup>nd</sup>	Space, time, mass, particle, flexible body and rigid body.
3.		3 <sup>rd</sup>	Scalar and vector quantity, Units of measurement (SI units) - Fundamental units and derived units.
4.		4 <sup>th</sup>	Force – unit, representation as a vector and by Bow's notation, characteristics and effects of a force,
5.	2 <sup>nd</sup>	1 <sup>st</sup>	Principle of transmissibility of force, Force system and its classification.
6.		2 <sup>nd</sup>	Resolution of a force - Orthogonal components of a force, moment of a force, Varignon's Theorem.
7.		3 <sup>rd</sup>	Composition of forces – Resultant, analytical method for determination of resultant for concurrent co-planar force systems, solve numerical
8.		4 <sup>th</sup>	solve numerical
9.	3 <sup>rd</sup>	1 <sup>st</sup>	analytical method for determination of resultant for non-concurrent and parallel co-planar force systems, solve numerical
10.		2 <sup>nd</sup>	solve numerical
11.		3 <sup>rd</sup>	analytical method for determination of resultant for parallel co-planar force systems, solve numerical
12.		4 <sup>th</sup>	solve numerical
13.	4 <sup>th</sup>	1 <sup>st</sup>	Law of triangle and derivation of it.
14.		2 <sup>nd</sup>	parallelogram and derivation of it.
15.		3 <sup>rd</sup>	polygon of forces and derivation of it.
16.		4 <sup>th</sup>	Doubt Clearance class with previous year Questions and answer discussion
17.	5 <sup>th</sup>	1 <sup>st</sup>	Equilibrium and Equilibrant, Free body and Free body diagram, Analytical and graphical methods of analysing equilibrium
18.		2 <sup>nd</sup>	Lami's Theorem – statement and explanation,
19.		3 <sup>rd</sup>	Application of Lami's Theorem for various engineering problems.
20.		4 <sup>th</sup>	Types of beam, supports (simple, hinged, roller and fixed) and loads acting on beam (vertical and inclined point load, uniformly distributed load, couple),
21.	6 <sup>th</sup>	1 <sup>st</sup>	Beam reaction for cantilever– subjected to combination of Point load and uniformly distributed load, Solve some numerical
22.		2 <sup>nd</sup>	simply supported beam with overhang – subjected to combination of Point load and uniformly distributed load. , Solve some numerical

23.	6 <sup>th</sup>	3 <sup>rd</sup>	simply supported beam without overhang – subjected to combination of Point load and uniformly distributed load, , Solve some numerical
24.		4 <sup>th</sup>	Beam reaction graphically for simply supported beam subjected to vertical point loads only.
25.	7 <sup>th</sup>	1 <sup>st</sup>	Practice more numerical on the above topics
26.		2 <sup>nd</sup>	Doubt Clearance class with previous year Questions and answer discussion
27.		3 <sup>rd</sup>	Friction and its relevance in engineering, types and laws of friction,
28.		4 <sup>th</sup>	limiting equilibrium, limiting friction, co-efficient of friction, angle of friction, angle of repose
29.	8 <sup>th</sup>	1 <sup>st</sup>	relation between co-efficient of friction and angle of friction, solve numerical
30.		2 <sup>nd</sup>	Equilibrium of bodies on level surface subjected to force parallel to plane.
31.		3 <sup>rd</sup>	Solve some numerical on the above
32.		4 <sup>th</sup>	Equilibrium of bodies on level surface subjected to force inclined to plane.
33.	9 <sup>th</sup>	1 <sup>st</sup>	Solve some numerical on the above
34.		2 <sup>nd</sup>	Equilibrium of bodies on inclined plane subjected to force parallel to the plane only.
35.		3 <sup>rd</sup>	Solve some numerical on the above
36.		4 <sup>th</sup>	Doubt Clearance class with previous year Questions and answer discussion
37.	10 <sup>th</sup>	1 <sup>st</sup>	Introduction to Centroid and Centre of gravity
38.		2 <sup>nd</sup>	Centroid of geometrical plane figures (square, rectangle) Solve numerical
39.		3 <sup>rd</sup>	Centroid of geometrical plane figures (triangle, circle) Solve numerical
40.		4 <sup>th</sup>	Centroid of geometrical plane figures (semi-circle, quarter circle) Solve numerical
41.	11 <sup>th</sup>	1 <sup>st</sup>	Centroid of composite figures composed of not more than three geometrical figures
42.		2 <sup>nd</sup>	Solve numerical on the above.
43.		3 <sup>rd</sup>	Centre of Gravity of simple solids (Cube, cuboid) Solve numerical
44.		4 <sup>th</sup>	Centre of Gravity of simple solids (Cone, cylinder) Solve numerical
45.	12 <sup>th</sup>	1 <sup>st</sup>	Centre of Gravity of simple solids (sphere, hemisphere) Solve numerical
46.		2 <sup>nd</sup>	Centre of Gravity of composite solids composed of not more than two simple solids.
47.		3 <sup>rd</sup>	Solve numerical on the above.
48.		4 <sup>th</sup>	Doubt Clearance class with previous year Questions and answer discussion
49.	13 <sup>th</sup>	1 <sup>st</sup>	Simple lifting machine, load, effort, mechanical advantage,
50.		2 <sup>nd</sup>	applications and advantages. Velocity ratio, efficiency of machines, law of machine.
51.		3 <sup>rd</sup>	Ideal machine, friction in machine, maximum Mechanical advantage and efficiency, reversible and non-reversible machines,
52.		4 <sup>th</sup>	conditions for reversibility Velocity ratios of Simple axle and wheel,
53.	14 <sup>th</sup>	1 <sup>st</sup>	conditions for reversibility Velocity ratios of Differential axle and wheel,
54.		2 <sup>nd</sup>	conditions for reversibility Velocity ratios of Worm and worm wheel,
55.		3 <sup>rd</sup>	conditions for reversibility Velocity ratios of Single purchase purchase crab winch,
56.		4 <sup>th</sup>	conditions for reversibility Velocity ratios of double purchase crab winch,

57.	15 <sup>th</sup>	1 <sup>st</sup>	Simple screw jack,
58.		2 <sup>nd</sup>	Weston's differential pulley block,
59.		3 <sup>rd</sup>	geared pulley block.
60.		4 <sup>th</sup>	Doubt Clearance class with previous year Questions and answer discussion

The above lesson plan prepared by the concerned faculty.

**Er. Aswin Pradhan**  
**GF, MECHANICAL DEPARTMENT**  
**GP Gajapati, Paralakhemundi**