

# 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 concurrentco-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,  |

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

The above lesson plan prepared by the concerned faculty.

**Er. Aswin Pradhan**  
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