"PVC" NSSK G.P. BILASPUR at KALOL	Department :- Mechanical Engg. (2nd sem)		Subject- EM (ES 106)		
	Course- Diploma		Duration -3 Years		
SYLLABSE COVERRAGE	Total Periods -56 (L - 42 , DCS – 14)		Theory-56		
Sr no.	**Period No's**	**Topic**	**Details**	**Instruction Reference**	**Additional Study Recommended**	**Remarks**
1	1-12	**Basics of mechanics and force system**	Significance and relevance of Mechanics, Applied mechanics, Statics, Dynamics. Space, time, mass, particle, flexible body and rigid body. Scalar and vector quantity, Units of measurement (SI units) - Fundamental units and derivedunits. Force – unit, representation as a vector and by Bow's notation, characteristics and effects of a force, Principle of transmissibility of force, Force system and its classification. Resolution of a force - Orthogonal components of a force, moment of a force, Varignon's Theorem. Composition of forces – Resultant, analytical method for determination of resultant for concur- rent, non-concurrent and parallel co-planar force systems – Law of triangle, parallelogram and polygon of forces	R.S. Khurmi, Applied Mechanics, S. Chand & Co. New Delhi. R.K. Bansal A text book of Engineering Mechanics, Laxmi Publications.		
2	13-24	**Equilibrium**	Equilibrium and Equilibrant, Free body and Free body diagram, Analytical and graphical meth-ods of analyzing equilibrium. Lami's Theorem – statement and explanation, Application for various engineering problems. Types of beam, supports (simple, hinged, roller and fixed) and loads acting on beam (vertical point load, uniformly distributed load), Beam reaction for cantilever, simply supported beam with or without overhang – subjected to combination of Point load and uniformly distributed load. Beam reaction graphically for simply supported beam subjected to vertical point loads only.	--------do--------	--------do--------	
3	25-35	**Friction**	Friction and its relevance in engineering, types and laws of friction, limiting equilibrium, limiting friction, co-efficient of friction, angle of friction, angle of repose, relation between co-efficient of friction and angle of friction. Equilibrium of bodies on level surface subjected to force parallel and inclined to plane. Equilibrium of bodies on inclined plane subjected to force parallel to the plane only.	--------do--------	--------do--------	

4	36-45	**Centroid and Centre of gravity**	Centroid of geometrical plane figures (square, rectangle, triangle, circle, semi-circle, quarter circle). Centroid of composite figures composed of not more than two geometrical figures. Centre of Gravity of simple solids (Cube, cuboid, cone, cylinder, sphere, hemisphere) Centre ofGravity of composite solids composed of not more than two simple solids.	--------do--------	--------do-------	
5	46-56	**Simple lifting machine**	Simple lifting machine, load, effort, mechanical advantage, applications and advantages. Velocity ratio, efficiency of machines, law of machine. Ideal machine, friction in machine, maximum Mechanical advantage and efficiency, reversible and non-reversible machines, conditions for reversibility. Velocity ratios of Simple axle and wheel, Differential axle and wheel, Worm and worm wheel, Simple screw jack..	--------do-------	--------do-------	

Approved	HOD Sign
Date : 27/01/25	