GOVERNMENT POLYTECHNIC KENDRAPARA
LESSON PLAN 5TH SEM MECHANICAL
SESSION 2025-2026

CLASS START DATE-14.07.2025
FACULTY NAME-BISWAJIT PARIDA SUB- DME (TH-2)

Sl. No.	Topics to be Covered	Week No.
1.0 Introduction:		
1.1	Introduction to Machine Design and Classify it.	1st
1.2	Different mechanical engineering materials used in design with their uses and their mechanical and physical properties.	
1.3	stress & factor of safety and stress –strain curve for M.S & C.I	2nd
1.4	Modes of Failure (By elastic deflection, general yielding & fracture)	
1.5	State the factors governing the design of machine elements.	3rd
1.6	Describe design procedure.	
2.0 Design of fastening elements:		
2.1	Joints and their classification.	4th
2.2	State types of welded joints .	
2.3	State advantages of welded joints over other joints.	
2.4	Design of welded joints for eccentric loads.	5th
2.5	State types of riveted joints and types of rivets.	
2.6	Describe failure of riveted joints.	
2.7	Determine strength & efficiency of riveted joints.	6th
2.8	Design riveted joints for pressure vessel.	
2.9	Solve numerical on Welded Joint and Riveted Joints.	
3.0 Design of shafts and Keys:		
3.1	State function of shafts.	7th
3.2	State materials for shafts.	
3.3	Design solid & hollow shafts to transmit a given power at given rpm based on a) Strength: (i) Shear stress, (ii) Combined bending tension; b) Rigidity: (i) Angle of twist, (ii) Deflection, (iii) Modulus of rigidity	
3.4	State standard size of shaft as per I.S.	8th
3.5	material of keys.	
3.6	Describe failure of key, effect of key way.	

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3.7	Design rectangular sunk key considering its failure against shear & crushing.	9th
3.8	Design rectangular sunk key by using empirical relation for given diameter of shaft.	
3.9	State specification of parallel key, gib-head key, taper key as per I.S.	10th
3.1	Solve numerical on Design of Shaft and keys.	
4.0 Design of Coupling:		
4.1	Design of Shaft Coupling	11th
4.2	Requirements of a good shaft coupling	
4.3	Types of Coupling.	
4.4	Design of Sleeve or Muff-Coupling.	12th
4.5	Design of Clamp or Compression Coupling.	
4.6	Solve simple numerical on above.	
5.0 Design a closed coil helical spring:		
5.1	Materials used for helical spring.	13th
5.2	Standard size spring wire. (SWG).	
5.3	Terms used in compression spring.	
5.4	Stress in helical spring of a circular wire.	
5.5	Deflection of helical spring of circular wire.	14th
5.6	Surge in spring.	
5.7	Solve numerical on design of closed coil helical compression spring.	

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