Lesson Plan for DESIGN OF MACHINE ELEMENT(TH.2) , 5th Semester, Mechanical Engg. (WINTER-2025)

Discipline: Mechanical Engg	Semester: 5th	Name of the Teaching Faculty: Sri B.K.Dash, Senior Lecturer, Mechanical
SUBJECT: DESIGN OF MACHINE ELEMENTS (TH.2)	No. of Days/ week class allotted=4	Semester Starts from 14.07.2025

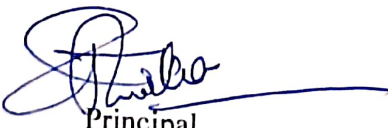| WEEK	PERIOD	TOPICS TO BE COVERED
01	01	**INTRODUCTION TO SUBJECT**
	02	Introduction to Machine Design and Classify it.
	03	Different mechanical engineering materials used in design with their uses and their mechanical and physical properties.
	04	Define working stress, yield stress, ultimate stress & factor of safety and stress –strain curve for M.S & C.I.
02	01	Modes of Failure (By elastic deflection, general yielding & fracture)
	02	State the factors governing the design of machine elements.
	03	Describe design procedure.
	04	**Design of fastening elements** Joints and their classification.
03	01	State types of welded joints
	02	State advantages of welded joints over other joints Review of chapter-1
	03	Design of welded joints for eccentric loads.
	04	State types of riveted joints and types of rivets
04	01	Describe failure of riveted joints.
	02	Determine strength & efficiency of riveted joints.
	03	Design riveted joints for pressure vessel.
	04	Solve numerical on Welded Joint and Riveted Joints.
05	01	Solve numerical on Welded Joint and Riveted Joints.
	02	Solve numerical on Welded Joint and Riveted Joints.
	03	Solve numerical on Welded Joint and Riveted Joints.
	04	**Design of shafts and Keys** State function of shafts.
06	01	Design solid & hollow shafts to transmit a given power at given rpm based on a) Strength: (i) Shear stress, (ii) Combined bending tension;
	02	Design solid & hollow shafts to transmit a given power at given rpm based on a) Strength: (i) Shear stress, (ii) Combined bending tension;
	03	Design solid & hollow shafts to transmit a given power at given rpm based on b) Rigidity: (i) Angle of twist, (ii) Deflection, (iii) Modulus of rigidity
	04	Design solid & hollow shafts to transmit a given power at given rpm based on b) Rigidity: (i) Angle of twist, (ii) Deflection, (iii) Modulus of rigidity
07	01	State standard size of shaft as per I.S.
	02	NUMERICALS
	03	State function of keys, types of keys & material of keys
	04	Describe failure of key, effect of key way.
08	01	Design rectangular sunk key considering its failure against shear & crushing.
	02	Design rectangular sunk key by using empirical relation for given diameter of shaft
	03	State specification of parallel key, gib-head key, taper key as per I.S.

		Solve numerical on Design of Shaft and keys.
	04	Solve numerical on Design of Shaft and keys.
09	01	Quiz test
	02	**Design of Coupling**
		Design of Shaft Coupling
	03	Requirements of a good shaft coupling
		Types of Coupling.
	04	Design of Sleeve or Muff-Coupling.
10	01	Design of Clamp or Compression Coupling.
	02	Solve simple numerical
	03	Solve simple numerical
	04	Test
11	01	**Design a closed coil helical spring:**
	02	Materials used for helical spring.
	03	Standard size spring wire. (SWG).
	04	Terms used in compression spring
12	01	Stress in helical spring of a circular wire.
	02	Deflection of helical spring of circular wire.
	03	Surge in spring.
	04	Solve numerical on design of closed coil helical compression spring.
13	01	Solve numerical on design of closed coil helical compression spring.
	02	Test
	03	Test
	04	REVISION
14	01	REVISION
	02	Previous year question discussion
	04	Previous year question discussion
	05	Previous year question discussion
15	01	Model test
	02	Familiar to data hand book
	03	Model test

Sri Bipin Kumar Desh
Concerned faculty

11/07/2025
HOD
Govt. Polytechnic Kandhamal

Principal
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