GANAPATI INSTITUTE OF ENGINERING & TECHNOLOGY(Polytechnic), JAGATPUR, CUTTACK DEPARTMENT OF MECHANICAL ENGINEERING. LESSON PLAN-2025 WINTER

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Discipline : MECHANICAL ENGG	Semester: 5th	Name of the Teaching Faculty:- BHABANI SANKAR SAHOO
Subject: DESIGN OF MACHINE ELEMENTS(TH -2)	No. of days/per week class allotted: 04	Semester From date: 14.07.2025 To Date: 15.11.2025 No. of Weeks: 15
Week	Class Day	Theory Topics
1 st	1 st	1.0 Introduction 1.1 Introduction to Machine Design and Classify it.
	2 nd	1.2 Different mechanical engineering materials used in design with their uses and their mechanical and physical properties
	3 rd	1.2 Different mechanical engineering materials used in design with their uses and their mechanical and physical properties
	4 th	1.2 Different mechanical engineering materials used in design with their uses and their mechanical and physical properties
2 nd	1 st	1.3Define working stress, yield stress, ultimate stress & factor of safety
	2 nd	1.3 stress –strain curve for M.S
	3 rd	1.3 stress –strain curve for C.I.
	4 th	1.4 Modes of Failure (By elastic deflection, general yielding & fracture)
3 rd	1 st	1.4 Modes of Failure (By elastic deflection, general yielding & fracture)
	2 nd	1.4 Modes of Failure (By elastic deflection, general yielding & fracture)
	3 rd	1.5 State the factors governing the design of machine elements
	4	1.6 Describe design procedure
	1 st	2.0 Design of fastening elements: 2.1 Joints and their classification.
	nd	2.2 State types of welded joints
4 th	2 rd	2.3 State advantages of welded joints over other joints.
	3 _{th}	2.4 Design of welded joints for eccentric loads
	1 ^{SI}	2.4 Design of welded joints for eccentric loads
	nd	Solve numerical on Welded Joint
	2 rd	2.5 State types of riveted joints and types of rivets.
	3 th	2.6 Describe failure of riveted joints.
	4	2.7 Determine strength & efficiency of riveted joints.
6 th	1 st	2.8 Design riveted joints for pressure vessel.
	2	2.9 Solve numerical on Welded Joint and Riveted Joints.
	3 th	CLASS TEST
	4	
7 th		3.Design of shafts and Keys:
	1 st	3.1 State function of shafts. 3.2 State materials for shafts.
	2 nd	based on a) Strength: (i) Shear stress, (ii) Combined bending tension; Rigidity: (i) Angle of twist, (ii) Deflection, (iii) Modulus of rigidity

tension; b) Rigidity: (i) Angle of twist, (ii) Deflection, (iii) Modulus of rigidity 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 11st Solve numerical on Design of Shaft 2nd 3.4 State standard size of shaft as per LS. 3.5 State function of keys, types of keys & material of keys. 3.6 Describe failure of key, effect of key way. 3.7 Design rectangular sunk key considering its failure against shear & crushing. 2nd 3.8 Design rectangular sunk key by using empirical relation for given dismeter of shaft. 3.10 Solve numerical on Design of keys. 4.0 Design of Coupling: 4.1 Design of Shaft Coupling. 4.1 Design of Shaft Coupling. 4.2 Requirements of a good shaft coupling. 4.3 Types of Coupling. 4.4 Design of Sleeve or Muff-Coupling. 4.4 Design of Sleeve or Muff-Coupling. 4.4 Design of Sleeve or Muff-Coupling. 4.5 Design of Clamp or Compression Coupling 4.5 Design of Clamp or Compression Coupling 4.5 Design of Clamp or Compression Coupling 4.6 Solve simple numerical on above 4.7 CLASS TEST 5.0 Design a closed coil helical spring: 5.1 Materials used for helical spring. 5.2 Standard size spring wire. (SWG). 3.1d Solve numerical on design of closed coil helical compression spring. 5.4 Stress in helical spring of a circular wire. 5.5 Deflection of helical spring of closed coil helical compression spring. 5.7 Solve numerical on design of closed coil hel			3.3 Design solid & hollow shafts to transmit a given power at given
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- Learning Resources:

 01. Machine Design by Pandya & Shah, Charotar PP

 02. A Textbook of Machine Design by R.S. Khurmi & J.K Gupta, S. Chand
 - A Textbook of Machine Design by P.C. Sharma &D.K. Agrawal, S,K, Kataria

 - Design of Machine Elements by V.B. Bhandari, TMH
 Design Data Book by S.MD. Jalaudeen, Anuradha Publication

Prepared By Er, BHABANI SANKAR SAHOO Lecturer In Mechanical Engg. Department G.I.E.T (Polytechnic), Jagatpur, Cuttack

Mechanical Erug. Deptt. JE, (Polyrechm Ja anur Principal
Principal
HET (Polytechnics
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