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: **01.07.2024** To Date: **08.11.2024** No. of Weeks: **15**
Week	**Class Day**	**Theory Topics**
1st	1st	**1.0 Introduction** 1.1 Introduction to Machine Design and Classify it.
	2nd	1.2 Different mechanical engineering materials used in design with their uses and their mechanical and physical properties
	3rd	1.2 Different mechanical engineering materials used in design with their uses and their mechanical and physical properties
	4th	1.2 Different mechanical engineering materials used in design with their uses and their mechanical and physical properties
2nd	1st	1.3Define working stress, yield stress, ultimate stress & factor of safety
	2nd	1.3 stress –strain curve for M.S
	3rd	1.3 stress –strain curve for C.I.
	4th	1.4 Modes of Failure (By elastic deflection, general yielding & fracture)
3rd	1st	1.4 Modes of Failure (By elastic deflection, general yielding & fracture)
	2nd	1.4 Modes of Failure (By elastic deflection, general yielding & fracture)
	3rd	1.5 State the factors governing the design of machine elements
	4th	1.6 Describe design procedure
4th	1st	**2.0 Design of fastening elements:** 2.1 Joints and their classification.
	2nd	2.2 State types of welded joints
	3rd	2.3 State advantages of welded joints over other joints.
	4th	2.4 Design of welded joints for eccentric loads
5th	1st	2.4 Design of welded joints for eccentric loads
	2nd	Solve numerical on Welded Joint
	3rd	2.5 State types of riveted joints and types of rivets.
	4th	2.6 Describe failure of riveted joints.
6th	1st	2.7 Determine strength & efficiency of riveted joints.
	2nd	2.8 Design riveted joints for pressure vessel.
	3rd	2.9 Solve numerical on Welded Joint and Riveted Joints.
	4th	**CLASS TEST**
7th	1st	**3.Design of shafts and Keys:** 3.1 State function of shafts. 3.2 State materials for shafts.
	2nd	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

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	3rd	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
	4th	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
8th	1st	Solve numerical on Design of Shaft
	2nd	3.4 State standard size of shaft as per I.S.
	3rd	3.5 State function of keys, types of keys & material of keys.
	4th	3.6 Describe failure of key, effect of key way.
9th	1st	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 diameter of shaft.
	3rd	3.9 State specification of parallel key, gib-head key, taper key as per I.S.
	4th	3.10 Solve numerical on Design of keys.
10th	1st	**4.0 Design of Coupling:** 4.1 Design of Shaft Coupling
	2nd	4.2 Requirements of a good shaft coupling
	3rd	4.3 Types of Coupling.
	4th	4.4 Design of Sleeve or Muff-Coupling.
11th	1st	4.4 Design of Sleeve or Muff-Coupling.
	2nd	4.4 Solve simple numerical on above
	3rd	4.5 Design of Clamp or Compression Coupling
	4th	4.5 Design of Clamp or Compression Coupling
12th	1st	4.5 Design of Clamp or Compression Coupling
	2nd	4.6 Solve simple numerical on above
	3rd	4.6 Solve simple numerical on above
	4th	**CLASS TEST**
13th	1st	**5.0 Design a closed coil helical spring:** 5.1 Materials used for helical spring.
	2nd	5.2 Standard size spring wire. (SWG).
	3rd	5.3 Terms used in compression spring.
	4th	5.4 Stress in helical spring of a circular wire.
14th	1st	5.4 Stress in helical spring of a circular wire.
	2nd	Solve numerical on design of closed coil helical compression spring.
	3rd	5.5Deflection of helical spring of circular wire.
	4th	5.5Deflection of helical spring of circular wire.
15th	1st	Solve numerical on design of closed coil helical compression spring.
	2nd	5.6 Surge in spring.
	3rd	5.7 Solve numerical on design of closed coil helical compression spring.
	4th	**CLASS TEST**

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
03. A Textbook of Machine Design by P.C. Sharma &D.K .Agrawal,S.K.Kataria
04. Design of Machine Elements by V.B. Bhandari, TMH
05. Design Data Book by S.MD. Jalaudeen, Anuradha Publication

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