

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: 01.10.2021 To Date: 08.01.2022 No. of Weeks: 15
Week	Class Day	Theory / Practical 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	1.3 Define 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 th	1.6 Describe design procedure
4 th	1 st	2.0 Design of fastening elements: 2.1 Joints and their classification.
	2 nd	2.2 State types of welded joints
	3 rd	2.3 State advantages of welded joints over other joints.
	4 th	2.4 Design of welded joints for eccentric loads
5 th	1 st	2.4 Design of welded joints for eccentric loads
	2 nd	Solve numerical on Welded Joint
	3 rd	2.5 State types of riveted joints and types of rivets.
	4 th	2.6 Describe failure of riveted joints.
6 th	1 st	2.7 Determine strength & efficiency of riveted joints.
	2 nd	Solve numerical on Riveted Joint
	3 rd	2.8 Design riveted joints for pressure vessel.
	4 th	2.9 Solve numerical on Welded Joint and Riveted Joints.
7 th	1 st	3.Design of shafts andKeys: 3.1 State function of shafts. 3.2 State materials for shafts.
	2 nd	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 rd	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
	4 th	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
8 th	1 st	Solve numerical on Design of Shaft
	2 nd	3.4 State standard size of shaft as per I.S.
	3 rd	3.5 State function of keys, types of keys & material of keys.
	4 th	3.6 Describe failure of key, effect of key way.
9 th	1 st	3.7 Design rectangular sunk key considering its failure against shear & crushing.
	2 nd	3.8 Design rectangular sunk key by using empirical relation for given diameter of shaft.
	3 rd	3.9 State specification of parallel key, gib-head key, taper key as per I.S.
	4 th	3.10 Solve numerical on Design of keys.
10 th	1 st	4.0 Design of Coupling: 4.1 Design of Shaft Coupling
	2 nd	4.2 Requirements of a good shaft coupling
	3 rd	4.3 Types of Coupling.
	4 th	4.4 Design of Sleeve or Muff-Coupling.
11 th	1 st	4.4 Design of Sleeve or Muff-Coupling.
	2 nd	Solve simple numerical on above
	3 rd	4.5 Design of Clamp or Compression Coupling
	4 th	4.5 Design of Clamp or Compression Coupling
12 th	1 st	4.5 Design of Clamp or Compression Coupling
	2 nd	4.6 Solve simple numerical on above
	3 rd	4.6 Solve simple numerical on above
	4 th	4.6 Solve simple numerical on above
13 th	1 st	5.0 Design a closed coil helical spring: 5.1 Materials used for helical spring.
	2 nd	5.2 Standard size spring wire. (SWG).
	3 rd	5.3 Terms used in compression spring.
	4 th	5.4 Stress in helical spring of a circular wire.
14 th	1 st	5.4 Stress in helical spring of a circular wire.
	2 nd	Solve numerical on design of closed coil helical compression spring.
	3 rd	5.5 Deflection of helical spring of circular wire.
	4 th	5.5 Deflection of helical spring of circular wire.
15 th	1 st	Solve numerical on design of closed coil helical compression spring.
	2 nd	5.6 Surge in spring.
	3 rd	5.7 Solve numerical on design of closed coil helical compression spring.
	4 th	5.7 Solve numerical on design of closed coil helical compression spring.

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

