Discipline : MECHANICALENGG	Semester : 5th	Name of the Teaching Faculty:-PRADEEP KUMAR JENA
Subject: MACHINE DESIGN	No. of days/per week classallotted: 04	Semester From date : 15.09.2022 To Date:22.12.2022 No. of Weeks 15
Week	Class Day	Theory / Practical Topics
1ST	1ST	Introduction to Machine Design and Classify it.
	2ND	Introduction to Machine Design and Classify it
	3RD	Different mechanical engineering materials used in design with theiruses and their mechanical and physical properties
	4TH	Different mechanical engineering materials used in design with theiruses and their mechanical and physical properties
2ND	1ST	Different mechanical engineering materials used in design with theiruses and their mechanical and physical properties
	2ND	Different mechanical engineering materials used in design with theiruses and their mechanical and physical properties
	3RD	Define working stress, yield stress, ultimate stress & factor ofsafety and stress –strain curve for M.S & C.I. Modes of Failure (By elastic deflection, general yielding & fracture)
	4TH	Define working stress, yield stress, ultimate stress & factor ofsafety and stress –strain curve for M.S & C.I. Modes of Failure (By elastic deflection, general yielding & fracture)
3RD	1ST	Define working stress, yield stress, ultimate stress & factor ofsafety and stress –strain curve for M.S & C.I. Modes of Failure (By elastic deflection, general yielding & fracture)
	2ND	State the factors governing the design of machine elements
	3RD	Describe design procedure
	4TH	Describe design procedure
4TH	1ST	Design of fastening elements
	2ND	Joints and their classification.
	3RD	State types of welded joints .
	4TH	State advantages of welded joints over other joints
5TH	1ST	Design of welded joints for eccentric loads.
	2ND	State types of riveted joints and types of rivets
	3RD	Describe failure of riveted joints.
	4TH	Determine strength & efficiency of riveted joints.
6TH	1ST	Design riveted joints for pressure vessel
	2ND	Solve numerical on Welded Joint and Riveted Joint
	3RD	Solve numerical on Welded Joint and Riveted Joint
	4TH	Solve numerical on Welded Joint and Riveted Joint
7TH	1ST	Design of shafts and Keys:State function of shafts. State materials for shafts.
	2ND	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
	3RD	Design solid & hollow shafts to transmit a given power at givenrpm based on a) Strength: (i) Shear stress, (ii) Combined bendingtension; b) Rigidity: (i) Angle of twist, (ii) Deflection, (iii) Modulusof rigidity
	4TH	Design solid & hollow shafts to transmit a given power at givenrpm based on a) Strength: (i) Shear stress, (ii) Combined bendingtension; b) Rigidity: (i) Angle of twist, (ii) Deflection, (iii) Modulusof rigidity
8TH	1ST	State standard size of shaft as per I.S.
	2ND	State function of keys, types of keys & material of keys.
	3RD	Describe failure of key, effect of key way.
	4TH	Design rectangular sunk key considering its failure against shear& crushing.
9TH	1ST	Design rectangular sunk key by using empirical relation forgiven diameter of shaft
	2ND	State specification of parallel key, gib-head key, taper key as perI.S.
	3RD	Solve numerical on Design of Shaft and keys.
	4TH	Solve numerical on Design of Shaftand keys.
10TH	1ST	**Design of Coupling:** Design of Shaft Coupling.
	2ND	Requirements of a good shaft coupling
	3RD	Types of Coupling.
	4TH	Design of Sleeve or Muff-Coupling
11TH	1ST	Design of Sleeve or Muff-Coupling
	2ND	Design of Clamp or Compression Coupling
	3RD	Design of Clamp or Compression Coupling
	4TH	Design of Clamp or Compression Coupling
12TH	1ST	Solve simple numerical on above
	2ND	Solve simple numerical on above
	3RD	Solve simple numerical on above
	4TH	Solve simple numerical on above
13TH	1ST	**Design a closed coil helical spring:** Materials used for helical spring
	2ND	Standard size spring wire. (SWG)
	3RD	Terms used in compression spring.
	4TH	Stress in helical spring of a circular wire.
14TH	1ST	Deflection of helical spring of circular wire.
	2ND	Deflection of helical spring of circular wire.
	3RD	Surge in spring.
	4TH	Solve numericalon design of closed coil helical compression

		spring.
15TH	1ST	Solve numericalon design of closed coil helical compressionspring.
	2ND	Solve numericalon design of closed coil helical compression spring.
	3RD	Solve numericalon design of closed coil helical compressionspring.
	4TH	Solve numericalon design of closed coil helical compression spring.

Learning Resouces:

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

Teaching Faculty

HOD(Mech)