NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)

LESSON PLAN

SUBJECT: TH-2 (DESIGN OF MACHINE ELEMENT)

Name Of The Faculty :- Er.Ranjit Giri
Branch :- Mechanical Engineering
Semester :- 5th
Academic Year : 2025-26
Examination :- 2025 (w)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	INTRODUCTION	12	12
2	DESIGN OF FASTENING ELEMENTS	12	12
3	DESIGN OF SHAFT AND KEYS	12	12
4	DESIGN OF COUPLING	12	12
5	DESIGN OF CLOSED COIL HELICAL SPRING	12	12
	Total Period:	60	60

10/07/2025

Sign of Faculty

10/07/2025

Sign of H.O.D.

Name of the programme: Diploma in MECHANICAL ENGINEERING	Semester: 5th	**Name of the Teaching Faculty:** Er. Ranjit GIRI	
		Academic Year : 2025-26 **Examination :** 2025 (W)	
Course Code: TH-2	**Course Year:** Third Year	**No. of Classes Alloted Per Week :**	4
		Planned Classes Required to Complete the Course	60

Week	Class Day	Topics to be Covered
1st	1st	1.1 Introduction to Machine Design and Classify it.
	2nd	1.1 Introduction to Machine Design and Classify it.
	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	1.3 Define working stress, yield stress, ultimate stress & factor of safety and stress –strain curve for M.S & C.I.
	2nd	1.3 Define working stress, yield stress, ultimate stress & factor of safety and stress –strain curve for M.S & C.I.
	3rd	1.4 Modes of Failure (By elastic deflection, general yielding & fracture)
	4th	1.4 Modes of Failure (By elastic deflection, general yielding & fracture)
3rd	1st	1.5 State the factors governing the design of machine elements.
	2nd	1.5 State the factors governing the design of machine elements.
	3rd	1.6 Describe design procedure.
	4th	1.6 Describe design procedure.
4th	1st	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	2.5 State types of riveted joints and types of rivets
	2nd	2.6 Describe failure of riveted joints.
	3rd	2.7 Determine strength & efficiency of riveted joints.
	4th	2.7 Determine strength & efficiency of riveted joints.

Week	Class Day	Topics to be Covered
6th	1st	2.8 Design riveted joints for pressure vessel
	2nd	2.8 Design riveted joints for pressure vessel
	3rd	2.9 Solve numerical on Welded Joint and Riveted Joints.
	4th	2.9 Solve numerical on Welded Joint and Riveted Joints.
7th	1st	3.1 State function of shafts
	2nd	3.2 State materials for shafts
	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	3.4 State standard size of shaft as per I.S.
	2nd	3.5 State function of keys, types of keys & material of keys.
	3rd	3.6 Describe failure of key, effect of key way.
	4th	3.7 Design rectangular sunk key considering its failure against shear
9th	1st	3.9 State specification of parallel key, gib-head key, taper key as per I.S.
	2nd	3.10 Solve numerical on Design of Shaft and keys.
	3rd	3.10 Solve numerical on Design of Shaft and keys.
	4th	3.10 Solve numerical on Design of Shaft and keys.
10th	1st	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	4.5 Design of Clamp or Compression Coupling
	3rd	4.5 Design of Clamp or Compression Coupling

Week	Class Day	Topics to be Covered
11th	4th	4.5 Design of Clamp or Compression Coupling
12th	1st	4.6 Solve simple numerical on above.
	2nd	4.6 Solve simple numerical on above.
	3rd	4.6 Solve simple numerical on above.
	4th	4.6 Solve simple numerical on above.
13th	1st	5.1 Materials used for helical spring
	2nd	5.1 Materials used for helical spring
	3rd	5.2 Standard size spring wire. (SWG).
	4th	5.3 Terms used in compression spring.
14th	1st	5.4 Stress in helical spring of a circular wire.
	2nd	5.4 Stress in helical spring of a circular wire.
	3rd	5.5 Deflection of helical spring of circular wire.
	4th	5.6 Surge in spring
15th	1st	5.7 Solve numerical on design of closed coil helical compression spring.
	2nd	5.7 Solve numerical on design of closed coil helical compression spring.
	3rd	5.7 Solve numerical on design of closed coil helical compression spring.
	4th	REVISION

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