

BLACK DIAMOND SCHOOL OF ENGINEERING, JHARSUGUDA

LESSON PLAN Session (2022-2023)

Discipline : Mechanical Engineering	Semester: 5 th (Winter 2022)	Name of the Teaching Faculty: Byomakesh Mishra, Lecturer.
Subject: Design of Machine Elements	No. Of Days/ Week: 4	Start Date: 14/ 09/ 2022 End Date: 21/ 01/ 2023
Week	Class Day	Theory Topics
1st	1st	Introduction about Machine Design and classification, types of load
	2nd	Factors governing the design of machine elements. Design procedure
	3rd	Mechanical properties of the material of the product.
	4th	Types of loads. Working stress, Yield stress, Ultimate Stress & Factor of safety. Fatigue & Creep.
2nd	1st	Review Class
	2nd	Assignment Evaluation & Class Test
	3rd	Method of riveting, Types of riveted joints
	4th	Failures of riveted joints, Strength & efficiency of riveted joints.
3rd	1st	Classroom Problem
	2nd	Classroom Problem
	3rd	Classroom Problem
	4th	Review Class
4th	1st	Types of welded joints. Advantages of welded joints over other joints.
	2nd	Strength of welded joints for eccentric loads.
	3rd	Classroom Problem
	4th	Classroom Problem
5th	1st	Classroom Problem
	2nd	Review Class
	3rd	Nomenclatures, form of threads & specifications.
	4th	Design of screw thread (nut and bolt).
6th	1st	Classroom Problem
	2nd	Classroom Problem
	3rd	Review Class
	4th	Assignment Evaluation & Class Test

7th	1st	Function of shafts. Materials for shafts. Standard size of shaft as per I.S.
	2nd	Design solid & hollow shafts to transmit a given power at given rpm based on (a) Strength (Shear stress, Combined bending & tension)
	3rd	Classroom Problem
	4th	Classroom Problem
8th	1st	Design solid & hollow shafts to transmit a given power at given rpm based on (b) Rigidity (Angle of twist, Deflection, modulus of rigidity)
	2nd	Classroom Problem
	3rd	Classroom Problem
	4th	Review Class
9th	1st	Assignment Evaluation & Class Test
	2nd	Function of keys, types of keys & material of keys. Failure of key, effect of key way.
	3rd	Design rectangular sunk key considering its failure against shear & crushing. Design rectangular sunk key by using empirical relation for given diameter of shaft.
	4th	Specification of parallel key, Gib-head key, taper key as per I.S.
10th	1st	Classroom Problem
	2nd	Classroom Problem
	3rd	Classroom Problem
	4th	Review Class
11th	1st	Quiz Test
	2nd	Design of Shaft Coupling
	3rd	Requirements of a good shaft coupling , Types of Coupling
	4th	Design of Sleeve or Muff-Coupling.
12th	1st	Classroom Problem
	2nd	Classroom Problem
	3rd	Design of Clamp or Compression Coupling.
	4th	Classroom Problem
13th	1st	Classroom Problem
	2nd	Review class
	3rd	Assignment Evaluation & Class Test
	4th	Materials used for helical spring. Standard size spring wire. (SWG), Terms used in compression spring.

14th	1st	Stress in helical spring of a circular wire. End connection for helical tension spring.
	2nd	End connection for helical tension spring. Deflection of helical spring of circular wire. Surge in spring
	3rd	Classroom Problem
	4th	Classroom Problem
15th	1st	Review class
	2nd	Assignment Evaluation & Class Test
	3rd	Discussion of previous year Questions
	4th	Discussion of previous year Questions