

Lesson Plan

Name of the Faculty : Mr. Deepak Anand
 Discipline : Mechanical Engineering
 Semester : 4th
 Subject : Strength of Materials (PCC-ME-206G)
 Lesson Plan Duration : 15 Weeks (from April 2021 to July 2021)
 ** Work Load (Lecture) per week (in hours): Lectures-03, Practicals-02 (Group-A & Group-B)

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/test)	Practical day	Topic
1 st	1 st	Deformation in solids- Hooke's law, stress and strain.	1 st	To study the Brinell hardness testing machine & perform the Brinell hardness test. (Group-A)
	2 nd	Tension, compression and shear stresses.	2 nd	To study the Brinell hardness testing machine & perform the Brinell hardness test. (Group-B)
	3 rd	Elastic constants and their relations.		
2 nd	4 th	Volumetric, linear and shear strains.	3 rd	To study the Rockwell hardness testing machine & perform the Rockwell hardness test. (Group-A)
	5 th	Principal stresses and principal planes.	4 th	To study the Rockwell hardness testing machine & perform the Rockwell hardness test. (Group-B)
	6 th	Mohr's circle.		
	7 th	Beams and Types of transverse loading on beams- Shear force and bending moment diagrams.	5 th	To study the Vickers hardness testing machine & perform the Vickers hardness test.

3 rd	8 th	Types of beam supports.	6 th	(Group-A) To study the Vickers hardness testing machine & perform the Vickers hardness test. (Group-B)
	9 th	Simply supported and over-hanging beams, cantilevers.		
4 th	10 th	Theory of bending of beams.	7 th	To study the Erichsen sheet metal testing machine & perform the Erichsen sheet metal test. (Group-A) To study the Erichsen sheet metal testing machine & perform the Erichsen sheet metal test. (Group-B)
	11 th	Bending stress distribution and neutral axis.	8 th	
	12 th	Shear stress distribution.		
5 th	13 th	Point and distributed loads.	9 th	To study the Impact testing machine & perform the Impact tests (Izod & Charpy). (Group-A) To study the Impact testing machine & perform the Impact tests (Izod & Charpy). (Group-B)
	14 th	Moment of inertia about an axis and polar moment of inertia.	10 th	
	15 th	Deflection of a beam using double integration method.		
6 th	16 th	Computation of slopes and deflection in beams.	11 th	To study the Universal testing machine & perform the Tensile test. (Group-A)
	17 th	Maxwell's reciprocal theorems.		

	18 th	Columns and struts: Column under axial load.	12 th	To study the Universal testing machine & perform the Tensile test. (Group-B)
7 th	19 th	Concept of instability and buckling, slenderness ratio.	13 th	To perform compression & bending tests on UTM. (Group-A) To perform compression & bending tests on UTM. (Group-B)
	20 th	Derivation of Euler's formulae for the elastic buckling load.	14 th	
	21 st	Eulers, Rankine, Gordon formulae.		
8 th	22 th	Johnson's empirical formula for axial loading columns and their applications.	15 th	To perform the shear test on UTM. (Group-A)
	23 rd	Eccentric compression of a short strut of rectangular and circular sections.	16 th	To perform the shear test on UTM. (Group-B)
	24 th	Numericals.		
9 th	25 th	Torsion- Stresses and deformation in solid circular and hollow circular shafts.	17 th	To study the torsion testing machine and perform the torsion test. (Group-A) To study the torsion testing machine and perform the torsion test. (Group-B)
	26 th	Stepped shafts.	18 th	
	27 th	Deflection of shafts fixed at both ends.		
10 th	28 th	Stresses and deflection of helical springs.		
	29 th	Axial and hoop stresses in		

		cylinders subjected to internal pressure.		
	30 th	Deformation of thick and thin cylinders.		
11 th	31 st	Deformation in spherical shells subjected to internal pressure.		
	32 nd	Slope & Deflection: Relationship between bending moment, slope & deflection.		
	33 rd	Mohr's theorem.		
12 th	34 th	Moment area method.		
	35 th	Method of integration.		
	36 th	Macaulay's method.		
13 th	37 th	Calculations for slope and deflection of (i) cantilevers		
	38 th	(ii) Simply supported beams with or without overhang under concentrated load, uniformly distributed loads or combination of concentrated and uniformly distributed loads.		
	39 th	Numericals.		
14 th	40 th	Revision		
	41 th	Revision		
	42 nd	Revision		
15 th	43 rd	Revision		
	44 th	Revision		
	45 th	Revision		