

LESSON PLAN

Discipline: Mechanical Engg.	Semester: Third (3 rd)	Name of the Faculty: Er Priyabrata Barik
Subject: Strength of Material	No. of days/week class allotted: Six (6)	Semester from Date: 15.09.22 to Date: 22.12.22 No. of Weeks: 15
WEEK	CLASS DAY	THEORY TOPICS
1 st	1 st	Introduction of Simple Stress and Strain Types of loads.
	2 nd	stress, & strain (axial & tangential)
	3 rd	Hook's law, Young's modulus, bulk modulus
	4 th	modulus of rigidity, Poisson's ratio.
	5 th	Derive the relation between three elastic constants.
	6 th	Continue
2 nd	1 st	Principle of superposition,
	2 nd	stresses in composite section.
	3 rd	Temperature stress.
	4 th	Continue
	5 th	Determine temperature stress in composite bar (single core)
	6 th	Continue
3 rd	1 st	Strain energy and resilience
	2 nd	stress due to gradually applied and sudden applied load
	3 rd	Simple problems on above
	4 th	Simple problems on above
	5 th	Simple problems on above
	6 th	Review class
4 th	1 st	Introduction of Thin Cylinder and Spherical Shell Under Pressure

	2 nd	Definition of hoop and longitudinal stress, strain.
	3 rd	Derivation of hoop stress,
	4 th	Derivation longitudinal stress.
	5 th	Hoop strain, longitudinal strain and volumetric strain.
	6 th	Monthly test - 01
5 th	1 st	Computation of the change in length,
	2 nd	Computation of the diameter and volume.
	3 rd	Simple problems on above.
	4 th	Simple problems
	5 th	Simple problems
	6 th	Review class
6 th	1 st	Introduction of Two-Dimensional Stress System. Determination of normal stress,
	2 nd	Determination of shear stress on oblique plane.
	3 rd	Determination of resultant stress on oblique plane.
	4 th	Location of principal plane
	5 th	computation of principal stress.
	6 th	Continue
7 th	1 st	Location of principal plane using mohr's circle.
	2 nd	Continue
	3 rd	computation of principal stress and
	4 th	computation of maximum shear stress using mohr's circle.

	5 th	Numerical
	6 th	Monthly test- 02
8 th	1 st	Numerical
	2 nd	Numerical
	3 rd	Numerical
	4 th	Review class
	5 th	Introduction of Bending Moment and Shear Force
	6 th	Types of beam and load
9 th	1 st	Concept of shear force and bending moment.
	2 nd	Shear force and bending moment diagram and its salient features.
	3 rd	Continue
	4 th	Illustration of cantilever beam under point load
	5 th	Illustration of cantilever beam under uniformly distribution load.
	6 th	Simply supported beam.
10 th	1 st	Continue
	2 nd	Overhanging beam.
	3 rd	Continue
	4 th	Numerical
	5 th	Numerical
	6 th	Monthly test - 03
11 th	1 st	Numerical
	2 nd	Numerical
	3 rd	Numerical

	4 th	Numerical
	5 th	Review class
	6 th	Introduction of Theory of Simple Bending
12 th	1 st	Assumption in the theory of bending.
	2 nd	Bending equation,
	3 rd	moment of resistance.
	4 th	Continue.
	5 th	Section modulus & neutral axis.
	6 th	Continue.
13 th	1 st	Solve simple problems
	2 nd	Simple problems
	3 rd	Simple problems
	4 th	Simple problems
	5 th	Review class
	6 th	Combined Direct & Bending Stresses Define column.
14 th	1 st	Axial load, eccentric load on column.
	2 nd	Direct stresses, bending stresses, maximum & minimum stresses.
	3 rd	Monthly Test - 04
	4 th	Numerical problems on above.
	5 th	Bulking load computation using Euler's formula (no derivation) in columns with various end conditions.
	6 th	Review class.

15 th	1 st	Introduction of Torsion. Assumption of pure torsion.
	2 nd	The torsion equation for solid subjected to pure torsion.
	3 rd	The torsion equation for hollow shaft subjected to pure torsion.
	4 th	Comparison between solid and hollow shaft subjected to pure torsion
	5 th	Numerical.
	6 th	Review class