2023-2024

Discipline: MECHANICAL	Semester: 3rd	Name of the Teaching Faculty: E.R SUMANTA BISWAL PTGF : Mechanical
Subject: SOM	No. of days/per week class allotted: 4	Semester From date: 01/08/2023 To date: No of weeks: 15
Week	Class Day	Theory Topics:
1st	1st	Simple stress& strain
	2nd	Types of load, stresses & strains,(Axial and tangential) ,
	3rd	Hooke's law, Young's modulus, bulk modulus, modulus of rigidity
	4th	Poisson's ratio, derive the relation between three elastic constants,
2nd	1st	Principle of super position, stresses in composite section
	2nd	Temperature stress, determine the temperature stress.
	3rd	stress in composite bar (single core) .
	4th	Strain energy and resilience,.
3rd	1st	Stress due to gradually applied, suddenly applied and impact load .
	2nd	Simple problems on above. ,
	3rd	Thin cylinder and spherical shell under internal pressure
	4th	Definition of hoop and longitudinal stress, strain
4th	1st	Derivation of hoop stress, longitudinal stress, hoop strain,
	2nd	longitudinal strain and volumetric strain.
	3rd	Computation of the change in length, diameter and volume
	4th	Simple problems on above .
5th	1st	Two dimensional stress systems.
	2nd	Determination of normal stress,
	3rd	shear stress and resultant stress on oblique plane
	4th	Location of principal plane and computation of principal stress

HOD, Mech

Sumanta Biswal

6th	1st	Location of principal plane and computation of principal stress and
	2nd	Maximum shear stress using Mohr's circle
	3rd	Bending moment& shear force
	4th	Types of beam and load
7th	1st	Concepts of Shear force and bending moment
	2nd	Shear Force and Bending moment diagram and its salient features
	3rd	illustration in cantilever beam,
	4th	simply supported beam
8th	1st	over hanging beam under point load and uniformly distributed load
	2nd	Theory of simple bending
	3rd	Assumptions in the theory of bending,.
	4th	Bending equation
9th	1st	, Moment of resistance
	2nd	Section modulus& neutral axis.
	3rd	Solve simple problems.
	4th	Combined direct & bending stresses
10th	1st	Define column
	2nd	Axial load, Eccentric load on column,.
	3rd	Direct stresses, Bending stresses,.
	4th	, Maximum& Minimum stresses.

HOD, MECH.

Sumanta Biswal

11th	1st	Numerical problems on above..
	2nd	Buckling load computation using Euler's formula
	3rd	in Columns with various end conditions .
	4th	Torsion
12th	1st	Assumption of pure torsion.
	2nd	The torsion equation for solid.
	3rd	hollow circular shaft
	4th	Comparison between solid and hollow shaft subjected to pure torsion
13th	1st	Revision class.
	2nd	Revision class.
	3rd	Revision class.
	4th	Revision class.
14th	1st	Revision class.
	2nd	Discussion of PYQ
	3rd	Discussion of PYQ
	4th	Discussion of PYQ
15th	1st	Discussion of PYQ
	2nd	Discussion of PYQ
	3rd	Discussion of PYQ
	4th	Discussion of PYQ

HOD, Mech.

Sumanta Bisoi.