GOVERNMENT POLYTECHNIC, KORAPUT
DEPARTMENT OF MECHANICAL ENGINEERING

Discipline: MECHANICAL ENGG	Semester: 3RD	Name of the Teaching Faculty: SHARMILA SABAR
Subject: STRENGTH OF MATERIAL	No. of days/per week class allotted:4	Semester From date: 2/9/20 To Date: 19/3/21.
		No. of Weeks:15

COURSE OUTCOMES	Students will develop ability towards
	1.Determination of stress, strain under uniaxial loading (due to static or impact load and temperature) in simple and single core composite bars.
	2.Determination of stress, strain and change in geometrical parameters of cylindrical and spherical shells due to pressure
	3.Realization of shear stress besides normal stress and computation of resultant stress in two dimensional objects.
	4.Drawing bending moment and shear force diagram and locating points in a beam where the effect is maximum or minimum.
	5.Determination of bending stress and torsional shear stress in simple cases
	6.Understanding of critical load in slender columns thus realizing combined effect of axial and bending load.

Week	Class Day	Theory/Practical Topics
1ST	1ST	Load, types of loads, stress & types of stresses
	2ND	Strain, types of strains, hookes law, young's modulus of elasticity
	3RD	Bulk's modulus, modulus of rigidity, poison's ratio, properties of materials
	4TH	Stress -strain diagram for ductile & brittle materials
2ND	1ST	Relation between elastic constants
	2ND	Principle of superposition & related numerical
	3RD	Stresses in composite section
	4TH	Temperature stress, temperature stress in composite bar
3RD	1ST	Strain energy, resilience, stress due to gradually applied , suddenly applied & impact load.
	2ND	Continued..
	3RD	Numericals
	4TH	Pressure vessels, classification of pressure vessels, hoop stress & longitudinal stress
4TH	1ST	Derivation of hoop stress & longitudinal stress
	2ND	Derivation of hoop strain ,longitudinal strain & volumetric strain
	3RD	Computation of change in length, diameter & volume
	4TH	Derivation of stress & strain in spherical vessel
5TH	1ST	Numericals
	2ND	Numericals

		3RD	Stress on oblique plane, determination of normal stress, shear stress, resultant stress on oblique plane subjected to direct stress in one direction
		4TH	Determination of stresses on oblique plane subjected to direct stress in two directions
6TH		1ST	Determination of stresses on oblique plane subjected to direct stress & shear stress
		2ND	Continued...
		3RD	Principal stress & principal strains
		4TH	Continued...
7TH		1ST	Mohr's circle
		2ND	Mohr's circle
		3RD	Numericals
		4TH	Numericals
8TH		1ST	Bems, types of beams & loads
		2ND	Concept of shear force & bending moment

		3RD	Shear force & bending moment diagram for cantilever beam
		4TH	Continued
9TH		1ST	Simply supported beam
		2ND	Simply supported beam
		3RD	Simly supported beam
		4TH	Simply supported beam
10TH		1ST	Overhanging beam
		2ND	Overhanging beam
		3RD	Simple bending & assumptions on the theory of simple bending
		4TH	Bending equation
11TH		1ST	Bending equation
		2ND	Bending equation
		3RD	Moment of resistance & neutral axis
		4TH	Section modulus
12TH		1ST	Numericals
		2ND	Numericals
		3RD	Numericals
		4TH	Numericals
13TH		1ST	Column, axial load, eccentric load , buckling load
		2ND	Direct stresses, bendind stresses, maximum & minimum stress
		3RD	Continued...
		4TH	Numericals
14TH		1ST	Numericals
		2ND	Buckling load using Euler's formula for different columns
		3RD	Torsion, assumption of pure torsion
		4TH	Torsion equation
15TH		1ST	Torsion equation for hollow & solid circular shaft
		2ND	Comparision between solid & hollow shaft subjected to pure torsion
		3RD	Numericals
		4TH	Numericals

...NING RESOURCES:

01 S Ramamrutham Strength of Materials Dhanpat Rai

02 R K Rajput Strength of Materials S.Chand

03 R.S khurmi Strength of Materials S.Chand

04 G H Ryder Strength of Materials Mc millon and co. lmtd

05 S Timoshenko and D H Young Strength of Materials TMH

Sharmela fabar
Sign. Of HOD I/C

Sign. Of Faculty
concerned

Principal