

**PNS SCHOOL OF ENGG. & TECH., MARSHAGHAI****DEPARTMENT OF MECHANICAL ENGINEERING****LESSON PLAN****SUBJECT: STRENGTH OF MATERIAL (3RD SEM)****NAME OF THE LECTURER: Er. RAMESH CHANDRA PRADHAN**

CHAPTER	MONTH	DATE	TOPIC TO BE COVERED
Simple stress & strain	SEP	15.09.22	Introduction to the subject and books to be used
		16.09.22	Types of load, stresses & strains,(Axial and tangential)
		19.09.22	Strains, Elastic limit, Hooke's law, Working stress, allowable stress and Factor of safety & Problems
		20.09.22	Young's modulus, bulk modulus, modulus of rigidity, Poisson's ratio,
		21.09.22	Derive the relation between three elastic constant(E&K)
		22.09.22	Derive the relation between three elastic constant(G&E)
		23.09.22	Principle of super position. Problems to find out deformation of the bar
		24.09.22	stresses in composite section.Numericals related to stresses composite section
		26.09.22	Temperature stress, determine the temperature stress in composite bar (single core)
		27.09.22	Strain energy and resilience, Stress due to gradually applied, suddenly applied and impact load. Numerical related to above
		28.09.22	Solved Problems
	29.09.22	Solved Problems	
	30.09.22	Solved Problems	
OCT	10.10.22	Solved Problems	
	11.10.22	Solved Problems	
Thin cylinder and spherical shell under internal pressure	OCT	12.10.22	Introduction thin cylinder, thick cylinder
		13.10.22	Definition of hoop and longitudinal stress, Derivation of hoop stress, longitudinal stress
		14.10.22	Definition and Derivation of hoop strain, longitudinal strain and volumetric strain
		15.10.22	Computation of the change in length, diameter and volume
		18.10.22	Solved Problems
		19.10.22	Solved Problems
		20.10.22	Class Test
Two dimensional stress systems	OCT	21.10.22	Principal planes, principal stress, sign convention
		22.10.22	Stresses on an oblique section of a body subjected to direct stress in one plane
		26.10.22	Stresses on an oblique section of a body subjected to direct stress in two mutual perpendicular direction
		27.10.22	Stresses on an oblique section of a body subjected to simple shear stress
		28.10.22	Stresses on an oblique section of a body subjected to direct stress in one plane accompanied by simple shear stress
		29.10.22	Stresses on an oblique section of a body subjected to direct stress in two
		31.10.22	mutual perpendicular direction accompanied by simple shear stress
	NOV	01.11.22	Graphical method for stresses on a oblique section of a body (Mohrs circle),Sign convention
		02.11.22	Mohr's circle method body subjected to direct stress in one plane, Stresses on body subjected to direct stress in two mutual perpendicular direction
		03.11.22	Mohr's circle method for body subjected to simple shear stress, Stresses on an body subjected to direct stress in one plane accompanied by simple shear stress
		04.11.22	Mohr's circle method for body subjected to direct stress in two mutual perpendicular direction accompanied by simple shear stress
		05.11.22	Solved Problems
09.11.22	Solved Problems		
		10.11.22	Introduction, Types of beams, supports and loads
		11.11.22	Shear force(SF) and Bending moment (BM) definition, Sign convention
		12.11.22	SFD, BMD – Cantilever beam with different types of loading
		14.11.22	Solved Problems
		15.11.22	Solved Problems

<b>Bending moment &amp; shear force</b>	<b>NOV</b>	17.11.22	Class Test
		18.11.22	SFD, BMD – Simply supported beam with different types of loading
		19.11.22	Solved Problems
		21.11.22	Solved Problems
		22.11.22	Solved Problems
		23.11.22	SFD, BMD – Overhanging beam with different types of loading
	<b>NOV</b>	24.11.22	Solved Problems
		25.11.22	Solved Problems
		26.11.22	Solved Problems
<b>Theory of simple bending</b>	<b>NOV</b>	28.11.22	Introduction
		29.11.22	Assumptions in the theory of bending, theory of simple bending
		30.11.22	Derivation of bending equation, position of neutral axis, moment of resistance.
	<b>DEC</b>	01.12.22	Distribution of bending stress across the section. Modulus of section, Strength of a section
		02.12.22	Solved Problems
		03.12.22	Solved Problems
<b>Combined direct &amp; Bending stresses</b>	<b>DEC</b>	05.12.22	Introduction, Column and strut, Eccentric loading. Column with Eccentric loading
		06.12.22	Direct stresses, Bending stresses, Maximum & Minimum stresses. Numerical problems on
		07.12.22	Solved Problems
		08.21.22	Classification of columns, end conditions, sign convention for bending moments
		09.12.22	Assumptions for Euler's theory, Euler's Formula
		10.12.22	Buckling load computation using Euler's formula (no derivation) in columns with various end conditions
		12.12.22	Solved Problems
13.12.22	Solved Problems		
<b>Torsion</b>	<b>DEC</b>	14.12.22	Introduction
		15.12.22	Assumption of pure torsion
		16.12.22	Derivation of The torsion equation for solid and hollow circular shaft
		17.12.22	Comparison between solid and hollow shaft subjected to pure torsion
		19.12.22	Solved Problems
		20.12.22	Class Test
		21.12.22	Previous semester question discussion
		22.12.22	Previous semester question discussion

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