

PNS SCHOOL OF ENGINEERING & TECHNOLOGY, MARSHAGHAI, KENDRAPARA

LESSON PLAN

Discipline : Mechanical	Semester:3RD	Name of the Teaching Faculty : Er.RAMESH CHANDRA PRADHAN
Subject : SOM(TH-2)	No. of Days / per week class allotted : 4	Semester From date : 14.07.2025 to Date :15.11.2025 No. of Weeks : 15
Week	Class Day	Topics
1st	1st	CH-1 Simple Stresses and Strains: Types of forces; Stress, Strain and their nature
	2nd	Mechanical properties of common engineering materials
	3rd	Significance of various points on stress – strain diagram for M.S. and C.I. specimens;
	4th	Significance of factor of safety; Relation between elastic constants
2nd	1st	Relation between elastic constants
	2nd	Stress and strain values in bodies of uniform section
	3rd	Stress and strain values in bodies of COMPOSITE section
	4th	Thermal stresses in bodies of uniform section
3rd	1st	Thermal stresses in bodies of COMPOSITE section
	2nd	NUMERICALS SOLVED
	3rd	NUMERICALS SOLVED
	4th	Strain Energy: Strain energy or resilience
4th	1st	proof resilience and modulus of resilience;
	2nd	Derivation of strain energy for the following cases: i) Gradually applied load
	3rd	Derivation of strain energy for the following cases: II)Suddely applied load
	4th	Derivation of strain energy for the following cases: iii)Impact applied load
5th	1st	NUMERICALS SOLVED
	2nd	NUMERICALS SOLVED
	3rd	CH-2 Shear Force & Bending Moment Diagrams: Types of beams
	4th	a) Cantilever beam, b) Simply supported beam, c) Over hanging beam, d) Continuous beam, e) Fixed beam
6th	1st	Types of Loads – Point load, UDL and UVL
	2nd	Definition and explanation of shear force and bending moment;
	3rd	NUMERICALS SOLVED
	4th	NUMERICALS SOLVED
7th	1st	NUMERICALS SOLVED
	2nd	NUMERICALS SOLVED
	3rd	NUMERICALS SOLVED
	4th	NUMERICALS SOLVED
8th	1st	NUMERICALS SOLVED
	2nd	NUMERICALS SOLVED
	3rd	CH-3 Theory of Simple Bending and Deflection of Beams
	4th	Explanation of terms: Neutral layer, Neutral Axis, Modulus of Section
9th	1st	Moment of Resistance, Bending stress, Radius of curvature;
	2nd	Assumptions in theory of simple bending;
	3rd	Bending Equation $M/I = \sigma/Y = E/R$
	4th	NUMERICALS SOLVED

10th	1st	Problems involving calculations of bending stress, modulus of section and moment of resistance
	2nd	Problems involving calculations of bending stress, modulus of section and moment of resistance
	3rd	Calculation of safe loads and safe span and dimensions of cross- section
	4th	Definition and explanation of deflection as applied to beams; Deflection formulae without proof for cantilever and simply supported beams with point load and UDL
11th	1st	NUMERICALS SOLVED
	2nd	NUMERICALS SOLVED
	3rd	CH-4 Torsion in Shafts and Springs: Definition and function of shaft
	4th	Calculation of polar M.I. for solid and hollow shafts
12th	1st	Assumptions in simple torsion
	2nd	Derivation of the equation $T/J = f_s/R = G\theta/L$
	3rd	Problems on design of shaft based on strength and rigidity
	4th	Numerical Problems related to comparison of strength and weight of solid and hollow shafts;
13th	1st	Numerical Problems related to comparison of strength and weight of solid and hollow shafts;
	2nd	Classification of springs; Nomenclature of closed coil helical spring;
	3rd	Deflection formula for closed coil helical spring (without derivation), Stiffness of spring
	4th	Numerical problems related to comparison of strength and weight of solid and hollow shafts;
14th	1st	CH-5 Thin Cylindrical Shells
	2nd	Explanation of longitudinal and hoop stresses in the light of circumferential and longitudinal failure of shell
	3rd	Derivation of expressions for the longitudinal and hoop stress for seamless shells
	4th	Derivation of expressions for the longitudinal and hoop stress for seam shells
15th	1st	Related numerical Problems for safe thickness and safe working pressure
	2nd	Related numerical Problems for safe thickness and safe working pressure
	3rd	NUMERICALS SOLVED
	4th	REVIEW

Signature of Lecturer

11.07.25

Signature of H.O.D

11.07.25

Signature of Principal