Lesson Plan

Discipline: Mechanical Engineering		Semester: 3RD		Faculty: Dr .Niharika Mohanta
Subject: Strength of Materials (TH2)		No of day/week of class allotted: 4 Periods		Semester starts from-15/09/2022 To:21/12/2022

MONTH	WEEK	AVAILABILITY OF CLASSES	CLASS DAY	THEORY TOPICS TO BE COVERED
September	1st	01	15/09/2022	Briefing about the syllabus **Module 1:Simple stress& strain** Introduction to the subject and books to be used
	2nd	04	19/09/2022	Types of load, stresses & strains,(Axial and tangential)
			21/09/2022	Strains, Elastic limit, Hooke's law, Young's modulus
			21/09/2022	bulk modulus, modulus of rigidity, Poisson's ratio,
			23/09/2022	Derive the relation between three elastic constant(E&K)
	3rd	04	26/09/2022	Derive the relation between three elastic constant(G&E))
			28/09/2022	Principle of super position. Problems to find out deformation of the bar
			30/09/2022	stresses in composite section.Numericals related to stresses composite section
October	4th	NA		
	5th	04	10/10/2022	Temperature stress, determine the temperature stress in composite bar (single core)
			12/10/2022	Strain energy and resilience, Stress due to gradually applied, suddenly applied and impact load. Numerical related to above
			12/10/2022	Problems for practice
			14/10/2022	Revision of module 1
	6th	04	17/10/2022	**Module 2:Thin cylinder and spherical shell under internal pressure:** Introduction thin cylinder, thick cylinder
			19/10/2022	Definition of hoop and longitudinal stress, Derivation of hoop stress, longitudinal stress
			19/10/2022	Definition and Derivation of hoop strain, longitudinal strain and volumetric strain
			21/10/2022	Computation of the change in length, diameter and volume
	7th	03	26/10/2022	Simple problems on above
			26/10/2022	Revision
			28/10/2022	**Module 3 : Two dimensional stress systems:** Principal planes, principal stress, sign convention
			29/10/2022	**Class test 1 (Class test will be conducted on Saturday 2nd half for module 1 and module 2)**
	8th	03	2/11/2022	Stresses on an oblique section of a body subjected to direct stress in one plane
			2/11/2022	Stresses on an oblique section of a body subjected to direct stress in two mutual perpendicular direction
			4/11/2022	Stresses on an oblique section of a body subjected to simple shear stress

Month	Week	No.	Date	Topic
November	9th	04	7/11/2022	Stresses on an oblique section of a body subjected to direct stress in one plane accompanied by simple shear stress
			9/11/2022	Stresses on an oblique section of a body subjected to direct stress in two mutual perpendicular direction accompanied by simple shear stress
			9/11/2022	Graphical method for stresses on a oblique section of a body (Mohrs circle),Sign convention
			10/11/2022	Mohr's circle method body subjected to direct stress in one plane, Stresses on body subjected to direct stress in two mutual perpendicular direction
	10th	04	14/11/2022	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
			16/11/2022	Mohr's circle method for body subjected to direct stress in two mutual perpendicular direction accompanied by simple shear stress
			16/11/2022	Simple problems on above
			17/11/2022	**Internal assessment**
			18/11/2022	**Internal assessment**
			19/11/2022	**Internal assessment**
	11th	04	21/11/2022	**Module 4 : Bending moment & shear force** Introduction, Types of beams, supports and loads
			23/11/2022	Shear force(SF) and Bending moment (BM) definition, Sign convention
			23/11/2022	SFD, BMD – Cantilever beam with different types of loading
			25/11/2022	Simple problems on above
	12th	03	28/11/2022	SFD, BMD – Simply supported beam with different types of loading
			30/11/2022	Simple problems on above
			30/11/2022	SFD, BMD – Overhanging beam with different types of loading
December	13th	05	02/12/2022	Simple problems on above
			03/12/2022	**Class test II(Class test will be conducted on Saturday 2nd half for module 3 and module 4)**
			05/12/2022	**Module 5:Theory of simple bending;** Introduction
			07/12/2022	Assumptions in the theory of bending, theory of simple bending
			07/12/2022	Derivation of bending equation, position of neutral axis, moment of resistance.
			09/12/2022	Distribution of bending stress across the section. Modulus of section, Strength of a section
	14th	04	12/12/2022	Simple problems on above
			14/12/2022	**Module 6: Combined direct & Bending stresses** Introduction, Column and strut, Eccentric loading. Column with Eccentric loading
			14/12/2022	Direct stresses, Bending stresses, Maximum& Minimum stresses. Numerical problems on above.
			16/12/2022	Numerical problems on above.

				19/12/2022	Classification of columns, end conditions, sign convention for bending moments
	15th	03		21/12/2022	Assumptions for Euler's theory.Eulers Formula
			•	21/12/2022	Buckling load computation using Euler's formula (no derivation) in columns with various end conditions
				Extra class	Simple problems on aboveand REVISION
				Extra class	**Module 7: Torsion** :Introduction, Assumption of pure torsion
₹	16th			Extra class	Derivation of The torsion equation for solid and hollow circular shaft
				Extra class	Comparison between solid and hollow shaft subjected to pure torsion.Simple problems
				Extra class	Revision

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19/09/2022

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