

Govt. Polytechnic, Nawada

Lesson Plan

Lecturer Name :- kundan kumar	No of Week- 24
Subject :- MECHANICS OF SOLIDS	Subject Code :-1625303
Semester :- 3rd	Branch :- Mechanical Engg.

	Unit-01 :- Mechanical Properties of Materials, Simple stresses & Strains		
Sl. No.	Topic Covered	Duration required in hrs.	Platform
1.1	Types of loads, Simple stresses & strains viz. tensile, compressive, Shear, Crushing, Thermal stresses, Hoop stresses & corresponding strains, Volumetric Strain, Bulk modulus, Hook's law, Young's modulus, Modulus of Rigidity	3	Google Classroom/vcs/ youtube
1.2	Concept of stresses & strains in thin cylindrical & spherical shells subjected to internal pressure.	3	Google Classroom/vcs/ youtube
1.3	Concepts of Buckling – Rankine's & Euler's formulae for buckling load for columns / shafts under compression, concepts of equivalent length for various end conditions.	3	Google Classroom/vcs/ youtube
1.4	Concepts of Deflection & slope of beams – relation between bending moment & slope. Deflection of simply supported beams and cantilever beams subjected to point load. (No derivation) (Problems on compressive & tensile	3	Google Classroom/vcs/ youtube
Class Test		2	GOOGLE FORM
	Unit-02 :- Strain Energy		
Sl. No.	Topic Covered	Duration required in hrs.	Platform
2.1	Concept, derivation & use of expression for deformation of axially loaded members under gradual, sudden & impact load	3	Google Classroom/vcs/ youtube
2.2	Strain energy due to self-weight.	2	
Class Test		3	GOOGLE FORM
	Unit-03 :- Bending Moment & Shear Force		
Sl. No.	Topic Covered	Duration required in hrs.	Platform

3.1	Shear force, bending moment & relation	3	Google Classroom/vcs/ youtube
3.2	Shear force & bending moment diagrams for simply supported beam & cantilevers subjected to point loads & Uniformly	3	Google Classroom/vcs/ youtube
3.3	Location of point of contraflexure. (Problems to be based on simply supported & cantilever beams with point load & UDL only)	3	Google Classroom/vcs/ youtube
Classl Test		2	GOOGLE FORM
Unit-04 :- Moment of Inertia			
Sl. No.	Topic Covered	Duration required in hrs.	Platform
4.1	Definition of Moment of inertia, Moment of inertia of different	3	Google Classroom/vcs/ youtube
4.2	Parallel & perpendicular axis theorem.	3	Google Classroom/vcs/ youtube
4.3	Moment of inertia of rectangular, circular, semicircular. Triangular, Hollow Rectangular, symmetrical I - Section, Channel section, Tee- section, angle	3	Google Classroom/vcs/ youtube
4.4	Polar moment of inertia.	3	Google Classroom/vcs/ youtube
Classl Test		2	GOOGLE FORM
Unit-05 :- Bending & Shear stresses			
Sl. No.	Topic Covered	Duration required in hrs.	Platform
5.1	Theory of simple bending, equation of be	3	Google Classroom/vcs/ youtube
5.2	Assumptions in the theory of bending, mo	3	Google Classroom/vcs/ youtube
5.3	modulus & neutral axis.	3	Google Classroom/vcs/ youtube
Classl Test		2	GOOGLE FORM
Unit-06 :- Combination of Bending & Direct stresses			
Sl. No.	Topic Covered	Duration	Platform
6.1	Axial load, eccentric load, direct stresses, bending stresses maximum & minimum stresses.	3	Google Classroom/vcs/ youtube
6.2	Application of the above concepts for ma links, C-clamp, Bench vice, Drilling machi of a short column, condition for no tensic stress variation diagrams. (Simple proble	3	Google Classroom/vcs/ youtube
Classl Test		3	GOOGLE FORM

Unit-07 :- Principal Planes & Principal Stresses			
Sl. No.	Topic Covered	Duration	Platform
7.1	Definition of principal plane & principal	2	Google Classroom/vcs/
7.2	Expression for normal and tangential str	2	Google Classroom/vcs/ youtube
7.3	Stresses on inclined planes.	2	Google Classroom/vcs/ youtube
7.4	Position of principal planes & planes of m	2	Google Classroom/vcs/ youtube
7.5	Graphical solution using Mohr's circle of s	3	Google Classroom/vcs/ youtube
Classl Test		2	GOOGLE FORM
Unit-08 :- Torsion			
Sl. No.	Topic Covered	Duration	Platform
8.1	Concept of Pure Torsion, Torsion equation for solid and hollow circular shafts. Assumptions in theory of pure Torsion	3	Google Classroom/vcs/ youtube
8.2	Comparison between Solid and Hollow Sl torsion (no problem on composite and no	3	Google Classroom/vcs/ youtube
Classl Test		2	GOOGLE FORM