

LESSONPLAN

Name of faculty:- SH. Krishan Kumar
Discipline:- Mech. Engg.
Semester:- 3rd
Subject:- SOM

Lesson plan duration:-15 weeks (from September, 2023 to December, 2023)

WEEK	THEORY		PRACTICAL	
	LECTURE DAY	Topic (Including Assignment/test)	PRACTICAL DAY	Topic
1 st week	1 st day	Unit 1: Stresses and Strains Basics concept of load, stress and strain	1 st day	1. Tensile test of mild steel bar
	2 nd day	Tensile, compressive, shear stress		
	3 rd day	Linear, lateral, shear, volumetric strain Concept of elasticity, elastic limit, limit of proportionality		
2 nd week	1 st day	Hook's law, elastic constant, nominal strain	1 st day	2. Tensile test of aluminum bar
	2 nd day	Stress-strain curve for ductile and brittle material		
	3 rd day	Yield point, plastic stage, ultimate and breaking stress, Percentage elongation, proof and working stress		
3 rd week	1 st day	Factor of safety, Poisson's ratio, thermal stress and strain, introduction to principal stresses	1 st day	Revision of practical no 1
	2 nd day	Longitudinal and circumferential stresses in seamless thin walled cylindrical shells		
	3 rd day	Unit 2: Resilience Strain energy, resilience, proof resilience and modulus of resilience		
4 th week	1 st day	Strain energy due to direct stress and shear stress	1 st day	Revision of practical 2
	2 nd day	Stress due to gradual, sudden and falling load		
	3 rd day	Unit 3: Moment of Inertia Concept of moment of inertia second		

		moment of inertia Radius of gyration		
5 th week	1 st day	Theorem of perpendicular and parallel axis	1 st day	3. Bending tests on steel bar
	2 nd day	Second moment of area of rectangle, triangle, circle and numerical of these		
	3 rd day	Second moment of area for L, T, I and numerical Section modulus		
6 th week	1 st day	Numerical problems and revision	1 st day	4. Bending tests on wooden bar
	2 nd day	Unit 4: Bending Moment and Shearing Forces Concept of various types of beams and loading		
	3 rd day	Concept of end supports, hinged and fixed, Concept of bending moment and shear force		
7 th week	1 st day	B.M and S.F diagram for cantilever beam	1 st day	5. Impact test on IZOD test
	2 nd day	B.M and S.F diagram for simply supported beam		
	3 rd day	B.M and S.F diagram of cantilever		
8 th week	1 st day	B.M and S.F diagram of simply supported beams with or without overhang and U.D.L	1 st day	6. Impact test on CHARPY test
	2 nd day	Numerical problems		
	3 rd day	Unit 5: Bending Stresses concepts of bending stresses		
9 th week	1 st day	Theory of simple bending, Derivation of bending equation	1 st day	7. Torsion test of solid specimen of circular section of different metals for determining modulus of
	2 nd day	Concept of moment of resistance		
	3 rd day	Bending stress diagram, section modulus		

10 th week	1 st day	for rectangles		rigidity
	2 nd day	Section modulus for circular and symmetrical I section		
	3 rd day	Bending stress in beams of rectangular section		
11 th week	1 st day	Bending stress in circular and Section	1 st day	Revision of practical 7
	2 nd day	Numerical and revision		
	3 rd day	Unit 6: Columns Concept column, moscofilero, Types of columns, modes of failure of column		
12 th week	1 st day	Buckling load, crushing load, slenderness ratio	1 st day	8. Top plot graph between load and extension and to determine the stiffness of a helical spring
	2 nd day	Effective length, end restraints		
	3 rd day	Factor effecting strength of a column, Strength of column by Euler formula without derivation		
13 th week	1 st day	Rankin Gordon formula	1 st day	Revision of practical 8
	2 nd day	Unit 7: Torsion concept of torsion, difference between torque and torsion		
	3 rd day	Use of torsion equation for circular shaft (solid and hollow)		
	1 st day	Comparison of solid and hollow shaft, Power transmitted by shaft	1 st day	9. hardness test on different material
	2 nd day	Concept of mean and maximum torque		
	3 rd day	Unit 8: Springs closed coil helical springs subjected to axial load		
15 th week	1 st day	Calculation of stress deformation, Stiffness, angle of twist, strain energy	1 st day	Revision of practical 9

	2 nd day	Numerical problems		
	3 rd day	Determination of number of plates of laminated springs		