

LESSON PLAN

Name of faculty: - Hitesh Aggarwal
 Discipline:- Mechanical Engineering
 Semester:- 3rd
 Subject:- Strength of Material

WEEK	LECTURE DAY	THEORY	PRACTICAL
		Topic (Including Assignment/test)	Topic
1 st week	1 st day	Unit 1: Stresses and Strains Basics concept of load, stress and strain	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	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	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	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	

5 th week	1 st day	Theorem of perpendicular and parallel axis	3. Bending tests on a 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	4. Bending tests on wooden bar
	2 nd day	Unit4: 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	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 and simply supported beams with or without overhang and U.D.L	
8 th week	1 st day	Numerical problems	6. Impact test on CHARPY test
	2 nd day	Unit5: Bending Stresses concepts of bending stresses	
	3 rd day	Theory of simple bending , Derivation of bending equation	
9 th week	1 st day	Concept of moment of resistance	7. Torsion test of solid specimen of circular section of different metals for determining modulus of rigidity
	2 nd day	Bending stress diagram, section modulus <i>for rectangles</i>	

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

15th week	1st day	Numerical problems	Revision of practical 9 on another metal
	2nd day	Determination of number of plates of laminated springs	
	3rd day	Revision Discuss on problems	
16th week	1st day	Numerical problems	Viva question
	2nd day	Numerical problems	
	3rd day	Numerical problems	
17th week	1st day	Revision	Viva question
	2nd day	Revision	
	3rd day	Revision	