

### LESSON PLAN

<b>Name of faculty:-</b>	Mr. Manish Kumar			
<b>Discipline:-</b>	Mech. Engg.			
<b>Semester:-</b>	3 <sup>rd</sup>			
<b>Subject:-</b>	SOM			
<b>Lesson plan duration :-</b>	16 weeks( Sep 2022 to Jan 2023)			
WEEK	THEORY		PRACTICAL	
	LECTURE DAY	Topic (Including Assignment/test)	PRACTICAL DAY	Topic
1 <sup>st</sup> week	1 <sup>st</sup> day	Unit 1 : <b>Stresses and Strains</b>	1 <sup>st</sup> day	1.Tensile test of mild steel bar
		Basics concept of load, stress and strain		
	2 <sup>nd</sup> day	Tensile, compressive, shear stress		
	3 <sup>rd</sup> day	Linear, lateral, shear, volumetric strain		
Concept of elasticity, elastic limit, limit of proportionality				
2 <sup>nd</sup> week	1 <sup>st</sup> day	Hooks law, elastic constant, nominal strain	1 <sup>st</sup> day	2.Tensile test of aluminum bar
	2 <sup>nd</sup> day	stress strain curve for ductile and brittle material		
	3 <sup>rd</sup> day	Yield point, plastic stage, ultimate and breaking stress Percentage elongation,		
3 <sup>rd</sup> week	1 <sup>st</sup> day	Factor of safety, poisson's ratio, thermal stress and strain, introduction to principal stresses	1 <sup>st</sup> day	Revision of practical 1
		2 <sup>nd</sup> day		
	3 <sup>rd</sup> day			
4 <sup>th</sup> week	1 <sup>st</sup> day	Strain energy due to direct stress and shear stress	1 <sup>st</sup> day	Revision of practical 2
	2 <sup>nd</sup> day	Stress due to gradual, sudden and falling load		
	3 <sup>rd</sup> day	Unit3: <b>Moment of Inertia</b>		
Concept of moment of inertia and second moment of inertia Radius of gyration				
5 <sup>th</sup> week	1 <sup>st</sup> day	Theorem of perpendicular and parallel axis	1 <sup>st</sup> day	3. Bending tests on a steel bar
	2 <sup>nd</sup> day	Second moment of area of rectangle, triangle, circle and numerical of these		
	3 <sup>rd</sup> day	Second moment of area for L,T,I and numerical Section modulus		
6 <sup>th</sup> week	1 <sup>st</sup> day	Numerical problems and revision	1 <sup>st</sup> day	4. Bending tests on wooden bar
	2 <sup>nd</sup> day	Unit4: <b>Bending Moment and Shearing Forces</b>		
		Concept to various types of beams and loading		
3 <sup>rd</sup> day	Concept of end supports, hinged and fixed, Concept of bending moment and shear force			
7 <sup>th</sup> week	1 <sup>st</sup> day	B.M and S.F diagram for cantilever beam	1 <sup>st</sup> day	5. Impact test on IZOD test
	2 <sup>nd</sup> day	B.M. and S.F diagram for simply supported beam		
	3 <sup>rd</sup> day	B.M and S.F diagram of cantilever and simply supported beams with or without overhang and U.D.L		

8 <sup>th</sup> week	1st day	Numerical problems	1st day	6. Impact test on CHARPY test
	2nd day	<b>Unit5: Bending Stresses</b> concepts of bending stresses		
	3rd day	Theory of simple bending , Derivation of bending equation		
9 <sup>th</sup> week	1st day	Concept of moment of resistance	1st day	7. Torsion test of solid specimen of circular section of different metals for determining modulus of Rigidity.
	2nd day	Bending stress diagram, section modulus for rectangles		
	3 <sup>rd</sup> day	Section modulus for circular and symmetrical I section, Bending stress in beams of rectangular		
10 <sup>th</sup> week	1 <sup>st</sup> day	Bending stress in circular and T section	1 <sup>st</sup> day	Revision of practical 7
	2 <sup>nd</sup> day	Numerical and revision		
	3 <sup>rd</sup> day	<b>Unit6: Columns</b> Concept of column, modes of failure, Types of columns, modes of failure of column		
11 <sup>th</sup> week	1 <sup>st</sup> day	Buckling load, crushing load, slenderness ratio	1 <sup>st</sup> day	8.To plot a graph between load and extension and to determine the stiffness of a helical spring
	2 <sup>nd</sup> day	Effective length, end restraints		
	3 <sup>rd</sup> day	Factor effecting strength of a column, Strength of column by Euler formula without derivation		
12 <sup>th</sup> week	1 <sup>st</sup> day	Rankin gourdan formula	1 <sup>st</sup> day	Revision of practical 8
	2 <sup>nd</sup> day	<b>Unit7: Torsion</b> concept of torsion, difference between torque and torsion		
	3 <sup>rd</sup> day	Derivation of torsion equation, Use of torsion equation for circular shaft (solid and hollow)		
13 <sup>th</sup> week	1 <sup>st</sup> day	Comparison of solid and hollow shaft	1 <sup>st</sup> day	9.hardness test on different material
	2 <sup>nd</sup> day	Power transmitted by shaft		
	3 <sup>rd</sup> day	Concept of mean and maximum torque		
14 <sup>th</sup> week	1 <sup>st</sup> day	<b>Unit8: Springs</b> Closed coil helical springs subjected to axial load	1 <sup>st</sup> day	Revision of practical 9
	2 <sup>nd</sup> day	Calculation of stress deformation		
	3 <sup>rd</sup> day	Stiffness, angle oftwest, strain energy		
15 <sup>th</sup> week	1 <sup>st</sup> day	Numerical problems	1 <sup>st</sup> day	Revision of practical 9 on another metal
	2 <sup>nd</sup> day	Determination of number of plates of laminated springs		
	3 <sup>rd</sup> day	Revision Discuss on problems		
16 <sup>th</sup> week	1 <sup>st</sup> day	Numerical problems	1 <sup>st</sup> day	Viva question
	2 <sup>nd</sup> day	Numerical problems		
	3rd day	Numerical problems		