ATME College of Engineering

Department of Mechanical Engineering

Lesson Plan & Work-Done Diary for AY:2024-25, Odd Semester

Course with Code: Mechanics of Materials BME301				Faculty: Dr. Srinivasa. K				Semester & Section: 3rd Sem
MODULE-1								
Class No.	**Date Planned (DD/MM)**	**Topics to be covered**	**TLP Planned**	**Class No.**	**Date of Conduction (DD/MM)**	**Topics Covered**	**TLP Executed**	**Remarks if any deviation**
1		**Simple stress and strain.** Definition/derivation of normal stress, shear stress,	Chalk & Talk PPT					
2		normal strain and shear strain – Stress strain diagram for brittle and ductile materials	Chalk & Talk PPT					
3		Poisson's ratio & volumetric strain – Elastic constants	Chalk & Talk PPT					
4		Relationship between elastic constants and Poisson's ratio – Generalized Hook's law	Chalk & Talk PPT					
5		Deformation of simple and compound bars, Resilience	Chalk & Talk PPT					
6		Gradual, sudden, impact and shock loadings – thermal stresses.	Chalk & Talk PPT					

7		Numerical on Stress and strain	Chalk					
8		Numerical on Poisons ratio and Elastic constants	Chalk					
9		Numerical Compound bars	Chalk					
10		Numerical on impact and thermal stresses	Chalk					
MODULE-2								
Class No.	**Date planned. (DD/MM)**	**Topics to be covered**	**TLP Planned**	**Class No.**	**Date of Conduction (DD/MM)**	**Topics Covered**	**TLP Executed**	**Remarks if any deviation**
11		**Bi-axial Stress system:** Introduction, plane stress, stresses on inclined sections,	Chalk & Talk PPT					
12		Principal stresses and maximum shear stresses	Chalk & Talk PPT					
13		Numerical Principal stresses and maximum shear stresses	Chalk					
14		Numerical Principal stresses and maximum shear stresses	Chalk					
15		Graphical method - Mohr's circle for plane stress	Chalk					
16		Numerical - Mohr's circle for plane stress	Chalk					
17		Numerical - Mohr's circle for plane stress	Chalk					

18		**Thick and Thin cylinders**: Stresses in thin cylinders, Lame's equation for thick cylinders subjected to internal and external pressures,	Chalk					
19		Changes in dimensions of cylinder (diameter, length and volume),	Chalk					
20		Simple numerical	Chalk					
MODULE-3								
Class No.	**Date planned. (DD/MM)**	**Topics to be covered**	**TLP Planned**	**Class No.**	**Date of Conduction (DD/MM)**	**Topics Covered**	**TLP Executed**	**Remarks if any deviation**
21		**Bending moment and Shear forces in beams:** Definition of beam	Chalk & Talk PPT					
22		Types of beams – Concept of shear force and bending moment.	PPT					
23		S.F and B.M diagrams for cantilever	PPT					
24		S.F and B.M diagrams for Overhanging beams subjected to point loads.	Chalk					
25		S.F and B.M diagrams uniformly distributed loads	Chalk					
26		S.F and B.M diagrams uniformly varying loads	Chalk					
27		S.F and B.M diagrams combination of these loads	Chalk					
28		Point of contra flexure	Chalk					

29		Numerical on SFD and BMD	Chalk					
30		Numerical on SFD and BMD	Chalk					
MODULE-5								
Class No.	**Date planned. (DD/MM)**	**Topics to be covered**	**TLP Planned**	**Class No.**	**Date of Conduction (DD/MM)**	**Topics Covered**	**TLP Executed**	**Remarks if any deviation**
31		**Torsion of circular shafts:** Introduction, pure torsion.	Chalk & Talk PPT					
32		Assumptions, derivation of torsional equations,	Chalk & Talk PPT					
33		Polar modulus, torsional rigidity / stiffness of shafts.	Chalk & Talk PPT					
34		Power transmitted by solid and hollow circular shafts.	Chalk & Talk PPT					
35		Numerical on Power transmitted by solid shafts.	Chalk & Talk					
36		Numerical on Power transmitted by solid shafts.	Chalk & Talk					
37		Numerical on Power transmitted by Hallow shafts.	Chalk & Talk					
38		**Theory of columns** – Long column and short column	Chalk & Talk PPT					
39		Euler's formula – Rankine's formula derivation.	Chalk & Talk PPT					
40		Numerical on columns	Chalk & Talk					

MODULE-4								
Class No.	**Date planned. (DD/MM)**	**Topics to be covered**	**TLP Planned**	**Class No.**	**Date of Conduction (DD/MM)**	**Topics Covered**	**TLP Executed**	**Remarks if any deviation**
41		**Theory of simple bending** – Assumptions – Derivation of bending equation. Neutral axis.	Chalk & Talk PPT					
42		Determination of bending stresses – section modulus of rectangular section	Chalk & Talk PPT					
43		Determination of bending stresses – section modulus of circular section	Chalk & Talk PPT					
44		Determination of bending stresses – section modulus of I, T and Channel sections	Chalk & Talk					
45		Design of simple beam sections, Shear Stresses.	Chalk & Talk					
46		Derivation of formula – Shear stress distribution across various beams section's introduction.	Chalk & Talk					
47		Derivation of formula – Shear stress distribution across various beams sections. like rectangular, circular, triangular, I, and T sections	Chalk & Talk					
48		Numerical on Determination of bending stresses – section modulus of rectangular section.	Chalk & Talk					
49		Numerical on Determination of bending stresses – section modulus of circular section	Chalk & Talk					
50		Numerical on Determination of bending stresses – section modulus of I and T section	Chalk & Talk					

	Activity	Planned	Actual	Remarks
1	Theory Classes	50		
2	Demonstrations & Lab Visit/ Experiment conduction	-		
3	Assignments/ Quizzes/ reports	2+3		
4	Tutorials/ Extra classes	-		
5	Internal Assessments	3		
6	ICT based Teaching. (% of usage in Curriculum)	50%		

Planning	Execution
Faculty Signature:	**Faculty Signature:**
HoD Signature:	**HoD Signature:**