

Samrat Ashok Technological Institute, Vidisha

Department of Mechanical Engineering

Lecture Plan

Course Code:	MEC232	Year/Semester :	BE IIIndYear/ 3rdSemeste
Course Name:	Strength & Mechanics of Material	Academic Year :	August-2023 / ODD
L – P:	3 – 2	Credit :	4
Course Detail :	Theory and Practical	Term Start Date :	01-08-2023
Course Coordinator:	Dr. Pradeep Singh	Term End Date :	

Academic Year: 2023					
Name of Teacher: Dr. Pradeep Singh					
Subject: Strength & Mechanics of Materials					
Theory/Tutorial: Theory					
Sr. No.	Name Of Unit/Topics	Hrs. Allotted	Actual Date	Teaching Aid Code	Remarks
	Unit: 1-Stress and Strain				
01	Elementary definition of stress and strain, stress- strain relationship	1	01.08.2023		
	elastic, plastic and visco-elastic behavior of common materials in tension and compression test	1	02.08.2023		
	stress-strain curves,Hooke's law,Tension, compression, shearing stress and strain	1	03.08.2023		
	Poisson's ratio, elastic constants and their relations for an isotropic hookean material	1	07.08.2023		
	thermal stresses, composite bars,	1	08.08.2023		
	equations of static equilibrium, concept of free body diagram	1	09.08.2023		
	Strain energy due to axial loading.	1	14.08.2023		
	Numericals related to the content	1	16.08.2023		
	Unit: 2- Members Subjected to Flexural Loads				
02	Theory of simple bending	1	21.08.2023		
	bending moment and shear force diagrams for different types of static loading	1	22.08.2023		
	support conditions on beams	1	23.08.2023		
	Bending stresses, section modulus	1	28.08.2023		
	transverse shear stress distribution in circular	1	29.08.2023		
	hollow circular, I, Box, T, angle sections etc	1	04.09.2023		

	Strain energy due to bending	1	05.09.2023		
	Numericals	1	06.09.2023		
	Unit: 3- Principal Planes, Stresses and Strains				
03	Members subjected to combined axial, bending and torsional loads	1	11.09.2023		
	Members subjected to combined axial, bending and torsional loads	1	12.09.2023		
	maximum normal and shear stresses	1	13.09.2023		
	concept of equivalent bending and equivalent twisting moments	1	18.09.2023		
	Mohr's circle of stress and strain.	1	19.09.2023		
	The necessity for a theory, different theories	1	20.09.2023		
	significance and comparison, applications	1	15.09.2023		
	Unit: 4- Torsion				
04	Torsional shear stress in solid	1	26.09.2023		
	angular deflection and power transmission capacity	1	27.09.2023		
	Strain energy due to torsional loads	1	03.10.2023		
	Instability and elastic stability, long and short columns	1	04.10.2023		
	ideal strut, Euler's formula for crippling load for columns of different end	1	09.10.2023		
	concept of equivalent length	1	10.10.2023		
	eccentric loading	1	11.10.2023		
	Rankine formulae and other empirical relations.	1	16.10.2023		
	Unit: 5- Transverse Deflection of Beams, Thin-walled Pressure Vessels				
05	Relation between deflection, bending moment, shear force and load	1	17.10.2023		
	Relation between deflection, bending moment, shear force and load	1	18.10.2023		
	transverse deflection of beams	1	23.10.2023		
	shaft under static loading	1	25.10.2023		
	area moment method, direct integration method	1	30.10.2023		
	Stresses in cylindrical and spherical vessels	1	31.10.2023		
	Stresses in cylindrical and spherical vessels	1	01.11.2023		
		1	06.11.2023		
Teaching Aid Code:		Sign of Teacher: _____			
1	White board				
2	L.C.D/overhead PROJECTOR				
3	MODEL&CHART				
4	PPT&VIDEO				
LESSON PLANNING, Rev. no. :00					

Reference Books:

1. Timoshenko, S.P., and Gere, J.M., "Mechanics of Materials", 2nd Ed., CBS Publishers
2. Crandall, S.H., Dahl, N.C., and Lardner, T.J., "An Introduction to the Mechanics of Solids", Tata McGraw-Hill
3. Pytel and Kiusalaas, "Mechanics of Materials" Cengage Learning
4. Punmia, Jain and Jain, "Mechanics of Materials", Laxmi Publication
5. Popov, E.P., Nagarajan, S., and Lu, Z. A., "Mechanics of Materials", 2ndEd., Prentice-Hall of India