



**Atal Bihari Vajpayee Govt Institute of Engineering &
Technology**

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Academic Year	JANUARY 2026 -JUNE 2026
Scheme	N-2022
Semester	FOURTH
Course Code	MEPC202
Course Name	Strength of Material
Course Type	PC
L-T-P	3-1-0
Name of Faculty	Parul Dhiman
Semester Start & End Dates	27-01-2026 TO 27-05-2026

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th.	Pr.	Internal Assessment			External Assessment					Total Marks	Credit
				Th.	Pr.	Total	Th.	Hrs.	Pr.	Hrs.	Total		
1	STRENGTH OF MATERIALS	04	--	40	--	40	60	3	--	3	60	100	3

	Name of Book	Author Name	Publication
Prescribed Books	Strength of Materials	D.S.Bedi,	Khanna Book Publishing Co.(P) Ltd., Delhi,2017
	Strength of Materials	S. Ramamrutham	Dhanpat Rai & Publication New Delhi

On the successful completion of this course, students will be able to:

CO1	Compute stress and strain values and find the changes in axial, lateral and volumetric dimensions of bodies of uniform section and of composite section under the influence of normal forces.
CO2	Calculate thermal stresses, in bodies of uniform section and composite sections.
CO3	Define resilience, proof-resilience and modulus of resilience and obtain expressions for instantaneous stress developed in bodies subjected to different loads.
CO4	Compute shear force and bending moment at any section of beam and draw the S.F. & B.M diagrams of for UDL and Point loads.
CO5	Calculate the safe load, safe span and dimensions of cross section.
CO6	Compare strength and weight of solid and hollow shafts of the same length and material. And compute the stress and deflection of the closed coil helical spring.

Teaching Plan:

Unit No	No. of Lect. Planned	Topic to be covered	Proposed date (as per time table)	Actual Date	Remarks
1. Simple Stresses and Strains	1	Types of forces; Stress, Strain and their nature	27.01.2026		
	2	Significance of various points on stress – strain diagram for M.S. and C.I. specimens	30.01.2026		
	3	Significance of various points on stress – strain diagram for M.S. and C.I. specimens	30.01.2026		
	4	Significance of factor of safety; Relation between elastic constants	31.01.2026		
	5	Stress and strain values in bodies of uniform section and of composite section under the influence of normal forces	03.02.2026		
	6	Thermal stresses in body of uniform section	5.02.2026		
	7	Strain energy or resilience, proof	06.02.2026		

		resilience and modulus of resilience			
	8	Formula without derivation of strain energy for the following cases: i) Gradually applied load, ii) Suddenly applied load, iii) Impact/shock load	07.02.2026		
	9	NUMERICAL	10.02.2026		
	10	NUMERICAL	12.02.2026		
	11	NUMERICAL	13.02.2026		
	12	NUMERICAL	17.02.2026		
Shear force & bending moment diagrams	13	Types of beams with examples	19.02.2026		
	14	Types of Loads	20.02.2026		
	15	Definition and explanation of shear force and bending moment	21.02.2026		
	16	Calculation of shear force and bending moment and drawing the S.F and B.M. diagrams by the analytical method only for the following cases: a) Cantilever with point loads, b) Cantilever with uniformly distributed load	24.02.2026		
	17	c) Simply supported beam with point loads, d) Simply supported beam with UDL	26.02.2026		
	18	e) Over hanging beam with point loads, at the centre and at free ends, f) Over hanging beam with UDL throughout, g) Combination of point and UDL	27.02.2026		
	19	NUMERICAL	03.03.2026		
	20	NUMERICAL	05.03.2026		
	21	NUMERICAL	06.03.2026		
	22	NUMERICAL	07.03.2026		
	23	Explanation of terms : Neutral layer, Neutral Axis, Modulus of	10.03.2026		

3. Theory of Simple Bending and Deflection of Beams		Section, Moment of Resistance, Bending stress, Radius of curvature			
	24	CLASS TEST-1	12.03.2026		
	25	Assumptions in theory of simple bending; Bending Equation $M/I = \sigma/Y = E/R$	13.03.2026		
	26	modulus of section and moment of resistance	17.03.2026		
	27	Definition and explanation of deflection as applied to beams	19.03.2026		
	28	Deflection formulae without proof for cantilever and simply supported beams with point load and UDL only	20.03.2026		
	29	NUMERICAL	24.03.2026		
	30	NUMERICAL	27.03.2026		
	31	NUMERICAL	28.03.2026		
	32	NUMERICAL	31.03.2026		
	33	NUMERICAL	02.04.2026		
	34	NUMERICAL	04.04.2026		
4. Torsion in Shafts and Springs	35	Definition and function of shaft	07.04.2026		
	36	CLASS TEST-2	09.04.2026		
	37	Calculation of polar M.I. for solid and hollow shafts; Assumptions in simple torsion	10.04.2026		
	38	Torsion equation $T/J = fs/R = G\theta/L$	16.04.2026		
	39	Simple Problems on design of shaft based on strength and rigidity	17.04.2026		
	40	Numerical Problems related to comparison of strength and weight of solid and hollow shafts	18.04.2026		
	41	Classification of springs; Nomenclature of closed coil helical spring	21.04.2026		

	42	Deflection formula for closed coil helical spring (without derivation); stiffness of spring	23.04.2026		
	43	Numerical problems on closed coil helical spring to find safe load, deflection, size of coil and number of coils.	24.04.2026		
	44	NUMERICAL	25.04.2026		
	45	NUMERICAL	28.04.2026		
	46	NUMERICAL	30.04.2026		
	47	NUMERICAL	02.05.2026		
Thin cylindrical shells	48	Explanation of longitudinal and hoop stresses in the light of circumferential and longitudinal failure of shell	05.05.2026		
	49	Derivation of expressions for the longitudinal and hoop stress	07.05.2026		
	50	NUMERICAL	08.05.2026		
	51	NUMERICAL	12.05.2026		
	52	NUMERICAL	14.05.2026		
	53	REVISION	15.05.2026		
	54	REVISION	16.05.2026		
	55	REVISION	19.05.2026		
	56	REVISION	21.05.2026		
	57	REVISION	22.05.2026		
	58	REVISION	23.05.2026		
	59	REVISION	26.05.2026		

Home Assignments

Ass. No	Contents of Syllabus Covered	Proposed date	Actual Date	Remarks
1	Unit-1&2	10/03/2026		
2	Unit-3&4	05/05/2026		

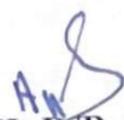
3			
---	--	--	--

Class /House Test

Name of Test	Syllabus Covered in Tests (Unit/Chapter Wise)	Proposed date	Actual Date	Remarks
Class Test-I	30% of whole syllabus	As per HPTSB Academic Calendar Schedule		
Class Test-II	60% of whole syllabus			
House Test	80% of whole syllabus			

Signature of Course Teacher with Name

Approved by


OIC/HoD/Principal

Faculty Signature: _____

Signature:  _____