PANIPAT INSTITUTE OF ENGINEERING AND TECHNOLOGY
PANIPAT
Department of Mechanical Engineering
LESSON PLAN

Subject Name: - Mechanics of Solids-I
Branch/Semester: - 3rd SEM **Subject Code:-MEC-203A**

S.No.	Lecture No.	Topics to be covered	Remarks
1.	L1	Force, Types & Characteristics of forces	
2.	L2	Resolution of forces & Laws of equilibrium	
3.	L3	Free body diagrams,Lami's Theorem	
4.	L4	Numerical Practices	
5.	L5	Centre of gravity &M.O.I. of various Shapes	
6.	L6	Numerical Practices	
7.	L7	Introduction to the stresses and strains	
8.	L8	Hook's Law, Poison's ratio	
9.	L9	Stress-Strain Diagram of Mild Steel	
10.	L10	Elastic constants & their relationships, Derivations	
11.	L11	Thermal Stresses & Strain	
12.	L12	Numerical Practices	
13.	L13	Compound bars under axial loading	
14.	L14	Two dimensional systems	
15.	L15	Stresses on an Inclined Plane	
16.	L16	Numerical Practices	
17.	L17	Principal Stresses	

18.	L18	Principal Strains	
19.	L19	Mohr's circle of Construction Procedure	
20.	L20	Numerical Practice	
21.	L21	Types of Loads, Types of Beams	
22.	L22	General Equations for SFD,General Equations for BMD	
23.	L23	SFD of UDL, BMD of UDL	
24.	L24	SFD and BMD of Combined Loads	
25.	L25	Numerical Practices	
26.	L26	SFD & BMD of UVL	
27.	L27	Numerical Practice	
28.	L28	Derivation of equation of torsion,	
29.	L29	Solid and hollow circularshafts, tapered shaft,	
30.	L30	Stepped shaft & composite circular shafts,	
31.	L31	Theory of simple bending, Assumptions, derivation ofequation of bending,	
32.	L32	Neutral axis, Determination of bending stresses, section modulus of rectangular & circular (solid & hollow)	
33.	L33	Bending Stresses on I,T, Angle, channel sections, composite beams	
34.	L34	Numerical Practices	
35.	L35	Shear stresses in beams with derivation	
36.	L36	Shear stress distribution across various beam sections	
37.	L37	Combined bending and torsion, equivalent torque	
38.	L38	Numerical Practices	
39.	L39	Introduction to the column under axial load, concept of instability and buckling,Slenderness ratio	

40.	L40	Numerical Practices	
41.	L41	Derivation of Euler's formula for crippling load for columns of different ends	
42.	L42	Concept of equivalent length, Rankine formulae, eccentric loading	
43.	L43	Numerical Practices	
44.	L44	Introduction to the slope and deflection	
45.	L45	Relationship between bending moment, slope & deflection, moment area method under various loading.	
46.	L46	Numerical Practices	
47.	L47	Method of integration, Macaulay's method, calculations for slope and deflection of beams under different loadings	
48.	L48	Numerical Practices	

(COURSE INCHARGE)