

UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR

Lecture-wise Plan

Subject Name: Mechanics of Materials-II

Subject Code-MEC409

Year: 2nd Year

Semester: 4th

Module Number	Topics	Number of Lectures
2	Introduction:Torsion	1L
	Torsion of a circular shaft	1L
	Shear energy in torsion; Torque and power transmitted	1L
	Strength of the shaft and torsional rigidity	1L
	Strength of the shaft in varying section; Composite shaft	2L
	Combined bending and torsion	1L
	Concept of closed and open coiled helical springs	3L
	Stresses and deflection of helical springs under axial pull	1L
	Total lectures	11 L
3	Theory of columns and strut: Introduction	1 L
	Failure of column; Euler's column theory	2L
	End conditions for long column; Effective length of the column	3L
	Euler's column theory and its limitation	1L
	Rankine formula; Eccentric loading of short strut	1L
	Empirical column formulae	1L
	Total lectures	09 L
4	Analysis of Stress in 3-Dimensions:Introduction	1L
	Body force, surface force and stress vectors	1L
	state of stress at a point, normal shear stress components	2L
	principal stresses in 3-dimensions.	1L
	stress invariants	2L
	Lame's stress ellipsoid, differential equations of equilibrium.	2L
	Total lectures	09 L

5	Analysis of Strain: Introduction	1L
	deformation in neighborhood of a point	1L
	change of length of linear element, state of strain at a point	2L
	principal axes of strain and principal strains	1L
	compatibility conditions	2L
	Total lectures	07 L
6	Stress strain relations for linearity elastic bodies	1L
	generalized Hooke's law	1L
	stress-strain relations for anisotropic, orthotropic and isotropic materials	2L
	Total lectures	04 L
1	Theory of Failure- significance and its importance	1L
	Maximum principle stress theory, Maximum principle strain theory	2L
	Maximum shear stress theory, Maximum strain energy theory	2L
	Graphical representation of theories for two dimensional stress system	1L
	Yield point phenomena; Strain Aging; Strain hardening	1L
	expression for strain energy for- gradual, sudden and impact load	2L
	Total lectures	09L