LESSON PLAN

Discipline:civil engineering				Name of The Teaching Faculty: CHIRANJEEB MISHRA	
Subject:Structural mechanics(TH1)				Semester From Date:15-09-2022 To Date 22-12-2022	
SEMESTER-5th				No. Of Weeks:16	5P/WEEK
No. of Days/week class allotted:05 period per week(Mon, TueWed,Thu,Fri-1 Period each)					TOTAL PERIOD-75

MONTH	Week	DATE	DAYS	Syllabus to be covered	NO. OF PERIODS AVAILABLE
				1.Review Of Basic Concepts	**4**
SEP	3RD	15.09.2022	THUS	Basic Principle of Mechanics: Force, Moment, support conditions, Conditions of equilibrium,	1
		16.09.2022	FRI	C.G & MI, Free body diagram	1
	4TH	19.09.2022	MON	Review of CG and MI of different sections	1
		20.09.2022	TUES	Numerical problems	1
				2.Simple And Complex Stress, Strain	**15**
		21.09.2022	WED	2.1 Simple Stresses and Strains	1
		22.09.2022	THUS	Mechanical properties of materials – Rigidity, Elasticity, Plasticity, Compressibility, Hardness, Toughness, Stiffness, Brittleness, Ductility,	1
		23.09.2022	FRI	and Shear stresses, Types of strains - Tensile, Compressive and Shear strains, Complimentary shear stress - Diagonal tensile / compressive Stresses due to shear, Elongation and Contraction,	1
	5TH	26.09.2022	MON	Poisson's Ratio, volumetric strain, computation of stress, strain, Poisson's ratio, change in dimensions and volume etc, Hooke's law - Elastic Constants, Derivation of relationship between the	1
		27.09.2022	S	Numerical problems	1
		27.09.2022	TUES	2.2 Application of simple stress and strain in engineering field:	
		28.09.2022	WED	materials under direct loads, Stress Strain curve of a ductile material, Limit of proportionality, Elastic limit, Yield stress, Ultimate stress, Breaking stress,	1
				reduction in area, Significance of percentage elongation and reduction in area of cross section	1

		29.09.2022	THUS	Numerical problems	1
		30.09.2022	FRI	uniaxial load	1
OCT	3RD	10.10.2022	MON	Deformation of prismatic bars due to its self weight.	1
		11.10.2022	TUES	**2.3 Complex stress and strain**	
				Occurrence of normal and tangential stresses	1
		12.10.2022	WED	Concept of Principal stress and Principal Planes	1
		13.10.2022	THUS	major and minor principal stresses and their orientations	1
		14.10.2022	FRI	Mohr's Circle and its application to solve problems of complex stresses	1
	4TH	17.10.2022	MON	Numerical problems	1
		18.10.2022	TUES	Numerical problems	1
				3.Stresses In Beams and Shafts	10
		19.10.2022	WED	Stresses in beams due to bending: Bending stress in beams – Theory of simple bending – Assumptions – Moment of resistance – Equation for	1
		20.10.2022	THUS	and Centroidal Axis – Flexural rigidity – Significance of Section modulus	1
		21.10.2022	FRI	Shear stresses in beams: Shear stress distribution in beams of rectangular, circular and standard sections	1
	5TH	26.10.2022	WED	Numerical problems	1
		27.10.2022	THUS	Concept of torsion, basic assumptions of pure torsion,	1
		28.10.2022	FRI	Torsion of solid and hollow circular sections, polar moment of inertia	1
	6TH			twist, torsional rigidity, equation of torsion	1
		31.10.2022	MON	Combination of stresses, Combined direct and bending stresses, Maximum and Minimum stresses in Sections	1
	1ST	1.11.2022	TUES	Numerical problems	1
		2.11.2022	WED	conditions for no tension, Limit of eccentricity, Middle third/fourth rule, Core or Kern for square, rectangular and circular sections, chimneys, dams and	1
		3.11.2022	THUS	**4.Columns and Struts**	4
		4.11.2022	FRI	Columns and Struts	1
	2ND	7.11.2022	MON	End conditions	1
				Slenderness ratio, Axially loaded short and long column	1
		09.11.2022	WED	Euler's theory of long columns, Critical load for Columns with different end	1
		10.11.2022	THU	**5.Shear Force and Bending Moment**	12

NOV		11.11.2022	FRI	**5.1 Types of loads and beams:**	
	3RD	14.11.2022	MON	Types of Loads: Concentrated (or) Point load, Uniformly Distributed load (UDL)	1
		15.11.2022	TUES	Roller support, Hinged support, Fixed support	1
		16.11.2022	WED	Types of Reactions: Vertical reaction, Horizontal reaction,moment reaction	1
				Calculation of support reactions using equations of static equilibrium.	1
		17.11.2022	THU	**5.2 Shear force and bending moment in**	
		18.11.2022	FRI	Shear Force and Bending Moment: Signs Convention for S.F. and B.M	1
	4TH	21.11.2022	MON	B.M of general cases of determinate beams with concentrated loads and udl	1
		22.11.2022	TUES	Simply supported beams and Over hanging beams,	1
		23.11.2022	WED	Numerical problems	1
		24.11.2022	THUS	Numerical problems	1
				Numerical problems	1
		25.11.2022	FRI	Position of maximum B.M, Point of contra flexure	1
	5TH	28.11.2022	MON	and B.M.	1
		29.11.2022	TUE	**6.Slope and Deflection**	10
		30.11.2022	WED	Introduction: Shape and nature of elastic curve (deflection curve)	1
DEC	1ST	1.12.2022	THUS	and curvature (No derivation), Importance of slope and deflection.	1
				Class test	1
				simply supported beams under concentrated load(by Double	1
		2.12.2022	FRI	Slope and deflection of cantilever and simply supported beams uniformly	1
	2ND	5.12.2022	MON	Slope and deflection of cantilever and simply supported beams under	1
		6.12.2022	TUES	Slope and deflection of cantilever and simply supported beams uniformly	1
		7.12.2022	WED	Numerical problems	1
				Numerical problems	1
		08.12.2022	THU	**7.Indeterminate Beams**	10
		09.12.2022	FRI	Indeterminacy in beams	1
	3RD	12.12.2022	MON	deformation/compatibility	1
				Principle of consistent deformation/compatibility	1
		13.12.2022	TUES	Analysis of propped cantilever beam by principle of superposition	1
		14.12.2022	WED	superposition	1
		15.12.2022	THUS	Analysis of two span continuous beams by principle of superposition	1
		16.12.2022	FRI	covering full span)	1

		19.12.2022	MON	covering full span)	1
	4TH	20.12.2022	TUES	covering full span)	1
		21.12.2022	WED	Numerical problems	1
		22.12.2022	THUS	**8.Trusses**	**10**
				Introduction	1
				Types of trusses	1
				indeterminate trusses	1
				Degree of indeterminacy	1
				Stable and unstable trusses	1
				Advantages of trusses.	1
		EXTRA CLASS		Analysis of trusses: Analytical method (Method of joints, method of Section)	1
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				Numerical problems	1