Name of Faculty:

Discipline: CIVIL. ENGG.

Semester: 3rd

Subject: Structural Mechanics.

Lesson Plan Duration: 15 weeks

Work load (Theory/Practical) per week (in hours): Theory-04 , Practical-02

WEEK	THEORY		PRACTICAL	
	LECTURE DAY	TOPIC	PRACTICAL DAY	TOPIC
1	1	To introduction about the subject	1st	Determination of yield stress, ultimate stress, percentage elongation and plot the stress strain diagram and compute the value of young's modulus on mild steel
	2	Properties of materials		
	3	Classification of material, elastic, Plastic, Ductile, Brittle materials		
	4	Introduction about tensile, compressive, impact, fatigue, torsion test		
2	1	Revision of ch. 1st.	2nd	Determination of yield stress, ultimate stress, percentage elongation and plot the stress strain diagram and compute the value of young's modulus on mild steel
	2	Concept of stress, normal and shear stresses		
	3	Concept of strain and deformation, longitudinal and strain.		
	4	Poisson ratio and volumetric stress		
3	1	Hook law, moduli of elasticity and rigidity, bulk modulus of elasticity,relation between the elastic constant.	3rd	Testing of HYSD Steel
	2	Stresses and strains in bars subjected to tension and compression.		
	3	Stress-strain diagram for mild steel and HYSD steel, mechanical properties, factor of safety.		
	4	Temperature stresses and strains		
4	1	Extension of uniform bar under its own weight, stress produced in compound bars (two or tPeriodsee) due to axial load.	4th	Determination of Young's modulus of elasticity for steel wire with searl's apparatus
	2	Revision of ch. 1st.		
	3	Concept of a beam and supports (Hinges, Roller and Fixed)		
	4	types of beams: simply supported, cantilever, propped, over hang, cantilever and continuous beams (only concept).		
5	1	Sessional 1st	-	
	2			
	3			
	4	Types of loads (dead load, live load, snow load, wind load seismic load as per IS Codes etc)		
6	1	and types of loading (point, uniformly distributed and uniformly varying loads)	5th	Determination of Young's modulus of elasticity for steel wire with searl's apparatus
	2	Concept of bending moment and shear force,		

	3	Bending Moment and shear force diagrams for cantilever		
	4	simply supported and overhanging beams subjected to concentrated, uniformly distributed.		
7	1	Relationship between load, shear force and bending moment, point of maximum bending moment, and point of contraflexure.	6th	Determination of modulus of rupture of a concrete beam
	2	Revision of ch. 3rd and assignment.		
	3	Concept of moment of inertia and second moment of area and radius of gyration, theorems of parallel		
	4	perpendicular axis, second moment of area of common geometrical sections: rectangle, triangle, circle		
8	1	Second moment of area for L, T and I sections, section modulus.	7th	Determination of modulus of rupture of a concrete beam
	2	Bending Stresses in Beams		
	3	Concept of pure/simple bending		
	4	Assumptions made in the theory of simple bending, derivation		
9	1	application of bending equation to circular cross-section, I section, T&L sections only	8th	Determination of maximum deflection and young's modulus of elasticity in simply supported beam with load at middle third point
	2	Moment of resistance Calculations of bending stresses in simply supported beam		
	3	Revision of ch 4th and 5th		
	4	Class test of ch 5th		
10	1	Sessional test 2nd	-	
	2			
	3			
	4	Explanation of sessional		
	5	Copy and assignment check		
11	1	Shear Stresses in Beams	9th	Determination of maximum deflection and young's modulus of elasticity in simply supported beam with load at middle third point
	2	Concept of shear stresses in beams		
	3	shear stress distribution in rectangular, circular I, T, L sections for S.S. beams and Portland		
	4	Revision of covered syllabus		
12	1	Slope and Deflection:	10th	Verification of forces in a framed structure
	2	Determination of slope and deflection using Moment Area Theorem for simply supported beam for pointed load		
	3	Determination of slope and deflection using Moment Area Theorem for simply supported beam for UDL load		
	4	Columns		
13	1	Theory of columns	11th	Verification of forces in a framed structure
	2	Problem solving using Eulers and Rankine Formula		
	3	Class test and assignment		

	4	Analysis of Trusses		
14	1	Concept of a perfect, redundant and deficient frames	12th	**Repeat any experiment and copy check**
	2	**Assumptıons and analysıs of trusses by** a) Method of joints		
	3	**Assumptıons and analysıs of trusses by** a) Method of Section		
	4	Revision and doubt clear from complete syllabus		
15	1	Sessional 3rd	-	-
	2			
	3			
	4	Problem discussion for Sessional test		
	5	Revision and doubts from all units		