

Name of Faculty: ANAND

Discipline: CIVIL. ENGG.

Semester: 3rd

Subject: Structural Mechanics.

Lesson Plan Duration: 15 weeks (SEPT – DEC. 2020)

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	1 st	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. 1 st .	2 nd	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.	3 rd	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.	4 th	Determination of Young's modulus of elasticity for steel wire with searl's apparatus
	2	Revision of ch. 1 st .		
	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 1 st	-	
	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)	5 th	Determination of Young's modulus of elasticity for steel wire with searl's annaratus
	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.	6 th	Determination of modulus of rupture of a concrete beam
	2	Revision of ch. 3 rd 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.	7 th	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	8 th	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 4 th and 5 th		
	4	Class test of ch 5 th		
10	1	Sessional test 2 nd	-	
	2			
	3			
	4	Explanation of sessional		
	5	Copy and assignment check		
11	1	Shear Stresses in Beams	9 th	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:	10 th	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	11 th	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	Assumptions and analysis of trusses by a) Method of joints		
	3	Assumptions and analysis of trusses by a) Method of Section		
	4	Revision and doubt clear from complete syllabus		
15	1	Sessional 3 rd	-	-
	2			
	3			
	4	Problem discussion for Sessional test		
	5	Revision and doubts from all units		