GOVT. POLYTECHNIC SIRSA

LESSON PLAN

Name of the Faculty : AARTI ARORA
Discipline : CIVIL ENGG.
Semester : 3rd
Subject :STRUCTURAL MECHANICS
Lesson Plan Duration : 15 WEEKS (FROM 7 SEP TO 24 DEC 2020) L:3 P:2

Week	Theory		Practical	
	Lecture Day	**Topic (including assignment / test)**	**Practical week**	**Topic**
1.	1.	To Introuction about the subject Properties of materials	1st	Determination of yield stress, ultimte stress, percentage elongation and plot the stress strain diagram and compute the value of yound's modules on mild steel
	2.	Classification of material, elastic, Plastic, Ductile, brittle materials.		
	3.	Introduction about tensile, compressive, impact, fatigue, torsion test.		
2.	1.	Concept of stress, normal and shear stresses.	2nd	Determination of yield stress, ultimte stress, percentage elongation and plot the stress strain diagram and compute the value of yound's modules on mild steel
	2.	Concept of strain and deformation, Logtitudinal and strain.		
	3.	Poisson ration 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.	Stressess and strains in bars subjected to tension and compression.		
	3.	Stress and strains diagram for mild steel and HYSD steel, mechanical properties, factor of safety. Temperature stresses and strains.		

4.	1.	Extension of uniform bar under its own weight, stress produced in compund bars (wo or tPeriodsee) due to axial load.	4th	Determination of young's modulus of elasticity for steel wire with searl's apparatus
	2.	Concept of a beam and supports (Hinges, Roller and Fixed)		
	3.	Types of beams : simply supported, cantilever, propped, over hand, cantilever and continuous beams (only concept).		
5.	1.	Sessional 1st		
	2.			
	3.	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) Concept of bending moment and shear force, sign conventions.	5th	Determination of young's modulus of elasticity for steel wire with searl's apparatus
	2.	Bending Moment and shear force diagram for cantilever.		
	3	Simply suported and overhanging beams subjected to concentrated, uniformly distributed.		
	1.	Relationship between load, shear force and bending moment, point of maximum bending moment and point of contraflexure.		

7.	2.	Concept of moment of inertia and second moment of area and radius of gyration, theorems of parallel	6th	Determination of modulus of rupture of a concrete beam
	3.	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 modulus.	7th	Determination of modulus of rupture of a concrete beam
	2.	Bending stresses in Beams Concept of pure/simple bending		
	3.	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 deflecion and young's molulus 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.		
10.	1.	Sessional test 2nd		
	2.			
	3.	Shear stresses in beams		
11.	1.	Concept of shear stresses in beams	9th	Determination of maximum deflecion and young's molulus of elasticity in simply supported
	2.	Shear stressdistribution in rectangular, circular section for simply supported beam		

	3	Shear stress distribution in rI,T,L sections for S.S beams and Portland		beam with load at middle third point
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.		
13.	1.	Columns Theory of Columns	11th	Verification of forces in a framed structure
	2.	Problem Solving using Eulers and Rankine Formula		
	3.	Analysis of Trusses		
14.	1.	Concept of a perfect, redundant and deficient frames	12th	Repeat any experiment and copy check
	2.	Assumptions and ananlysis of trusses by : (a) method of joints		
	3.	Assumptions and analysis of trusses by : (a) method of section		
15	1.	REVISION		
	2.	REVISION		
	3.	REVISION		