GOVT. POLYTECHNIC MAYURBHANJ LESSON PLAN-2022/23(SUMMER)

Discipline : CIVIL ENGG.	Semester: 4th Sem	Name of the Teaching Faculty :DAMAYANTI PRADHAN
Subject : STRUCTURAL MECHANICS(Th.1)	per week class allotted : 05	Semester From date : 15.09.2022 to Date : 17.01.2023

Month	Week	Day	Unit	Topics
OCTOBER	1ST	5TH	UNIT-1	**1.**Basic consepts regarding force,moment, support conditions,CG & MI of different sections.
	2ND	1ST	UNIT-2	**2. Simple and Complex Stress , Strain: Mechanical** properties of materials
		2ND		**2.1 Types of strains - Tensile,compressive and Shear** stresses.
		4TH		2.1 Elongation and contraction,longitudinal and lateral strains.
		5TH		2.1 Deviation of relationship between the elastic constants.
		6TH		**2.2 Application of simple stress and strain in engineering field:** Behaviour of ductile and brittle materials under direct load.
	4TH	4TH		**2.2** Significance of percentage elongation and reduction in area.
		5TH		**2.2** Deformation of prismatic bars due to uniaxial load.
		6TH		**2.3 Complex stress and strain :** Principal stresses and strains.

	5TH	2ND		Concept of Principal stress and Principal Planes.
NOVEMBER	1ST	1ST		Mohr's Circle and it's application to solve problems.
		2ND		**Chapter-1 Question and answers**
		3RD		**Chapter-2.1 Question and answers**
		6TH		**Chapter-2.2 Question and answers**
	2ND	1ST		**Chapter-2.3 Question and answers**
		2ND	UNIT-3	**3.1 Stresses in Beams and Shafts:** Stresses in beams due to bending , Theory of simple bending ,Assumptions.
		3RD		Moment of resistance , Equation for Flexure, Flexural stressdistribution,Curvature of beam.
		4TH		Position of N.A. and Centroidal Axis, Flexural rigidity Significance of section modulus.
		6TH		**CLASS TEST**
	3RD	1ST		**3.2 Shear stresses in beams :** Shear stress distribution in beams of rectangular
		2ND		Shear stress distribution in beams of circular and standard sections about vertical axis.
		3RD		**chapter-3.2 question and answers**
		4TH		**3.3 Stresses in shafts due to torsion:** Concept of torsion , basic assumptions of pure torsion
		6TH		Torsion of solid and hollow circular sections, polar moment of inertia.
		1ST		Torsional shearing stresses,angle of twist torsional rigidity,equation of torsion.
		2ND		**chapter-3.3 question and answers**

	4TH	3RD		**3.4 Combined bending and direct stresses:** Combination of stresses , combined direct and bending stresses.
		4TH		Maximum and minimum stresses in sections, Conditions for no tension , Limit of eccentricity.
		5TH		Middle third/fourth rule , core or kern for square, rectangular and circular sections.
	5TH	2ND		**chapter-3.4 question and answers**
DECEMBER	1ST	3RD		do
		4TH		**INTERNAL**
		6TH		**4. Columns and Struts :** Short and long columns, End conditions, Equivalent length, slenderness ratio.
	2ND	1ST	UNIT-4	Axially loaded short and long column,Euler's theory of long column.
		2ND		Critical load for columns with different end conditions.
		3RD		do
		4TH		**chapter-4 question and answers**
		6TH		**do**
	3RD	1ST	UNIT-5	**5. Shear force and bending moment :** Types of loads and beams.
		4TH		**5.2 Shear frorce and bending moment in diffent types of beams like simply supported beam,cantilevers beam and over hanging beams.**
		6TH		do
		1ST		**Chapter 5.2 question solve**
		2ND		**6.SLOPE AND DEFLECTION:** Shape and nature of elastic curve (deflection curve); Relationship between slope & deflection .

	4TH	**3RD**	**UNIT-6**	Deflection and curvature (No derivation), Importance of slope and deflection.
		4TH		Slope and deflection of simply supported , cantilever beams.
		5TH		Slope and deflection by double integration method,Macaulay's method.
	5TH	**1ST**		**Questions discussion**
		2ND	**UNIT-7**	**7. Indeterminate Beams:** Indeterminacy in beams , principle of consistent deformation
		3RD		Analysis of propped cantilever,fixed beams. Problem solve.
		4TH	**UNIT-8**	**8.Trusses: types of trusses ,statically determinate and indeterminate trusses.**

H.O.D SIGNATURE

ACADEMIC COORDINATOR SIGNATURE

SUBJECT EXPERT SIGNATURE