LESSON PLAN

(5periods per week, total 75 periods in SEM)

DISCIPLINE: Civil Engineering	**SEMESTER:** 3rd Semester	**NAME OF THE TEACHING FACULTY:** P Sankar Rao PTGF (Civil Engg.)
SUBJECT: Structural Mechanics	**NO. OF DAYS/PER WEEK CLASSES ALLOTTED:** 5	**SEMESTER FROM DATE: 01/08/2023 TO DATE:_____________** **NO. OF WEEKS:15**
Week	**Class Day**	**Theory Topic**
		1. Review Of Basic Concepts
1st	1ST	**1.1** Basic Principle of Mechanics: Force, Moment,
	2ND	support conditions Conditions of equilibrium,
	3RD	C.G & MI, Free body diagram
	4TH	**1.2** Review of CG and MI of different sections
		2. Simple And Complex Stress, Strain
	5th	2.1 Simple Stresses and Strains
2nd	1st	2.1 Simple Stresses and Strains
	2nd	2.1 Simple Stresses and Strains
	3rd	2.1 Simple Stresses and Strains
	4th	2.1 Simple Stresses and Strains
	5th	2.2 Application of simple stress and strain in engineering field
3rd	1st	2.2 Application of simple stress and strain in engineering field
	2nd	2.2 Application of simple stress and strain in engineering field
	3rd	2.2 Application of simple stress and strain in engineering field
	4th	2.3 Complex stress and strain
	5th	2.3 Complex stress and strain
4th	1st	2.3 Complex stress and strain

	2nd	2.3 Complex stress and strain
	3rd	2.3 Complex stress and strain
	4th	2.3 Complex stress and strain
		3. Stresses In Beams and Shafts
	5th	3.1 Stresses in beams due to bending
5th	1st	3.1 Stresses in beams due to bending
	2nd	3.1 Stresses in beams due to bending
	3rd	3.1 Stresses in beams due to bending
	4th	3.1 Stresses in beams due to bending
	5th	3.2 Shear stresses in beams:
6th	1st	3.2 Shear stresses in beams:
	2nd	3.2 Shear stresses in beams:
	3rd	3.3 Stresses in shafts due to torsion
	4th	3.3 Stresses in shafts due to torsion
		4. Columns and Struts
	5th	4.1 Columns and Struts, Definition, Short and Long columns, End conditions,
7th	1st	Equivalent length / Effective length, Slenderness ratio,
	2nd	Axially loaded short and long column,
	3rd	Euler's theory of long columns, Critical load for Columns with different end conditions
		5. Shear Force and Bending Moment
	4th	5.1 Types of loads and beams
	5th	5.1 Types of loads and beams
8th	1st	5.2 Shear force and bending moment in beams:
	2nd	5.2 Shear force and bending moment in beams:
	3rd	5.2 Shear force and bending moment in beams:

	4th	5.2 Shear force and bending moment in beams:
	5th	5.2 Shear force and bending moment in beams:
9th	1st	5.2 Shear force and bending moment in beams:
	2nd	5.2 Shear force and bending moment in beams:
	3rd	5.2 Shear force and bending moment in beams:
	4th	5.2 Shear force and bending moment in beams:
	5th	**5.2** Shear force and bending moment in beams:
	6. Slope and Deflection	
10th	1st	Shape and nature of elastic curve (deflection curve); Relationship between slope, deflection and curvature (No derivation), Importance of slope and deflection.
	2nd	Shape and nature of elastic curve (deflection curve); Relationship between slope, deflection and curvature (No derivation), Importance of slope and deflection.
	3rd	Shape and nature of elastic curve (deflection curve); Relationship between slope, deflection and curvature (No derivation), Importance of slope and deflection.
	4th	Shape and nature of elastic curve (deflection curve); Relationship between slope, deflection and curvature (No derivation), Importance of slope and deflection.
	5th	Shape and nature of elastic curve (deflection curve); Relationship between slope, deflection and curvature (No derivation), Importance of slope and deflection.
11th	1st	Slope and deflection of cantilever and simply supported beams under concentrated and uniformly distributed load (by Double Integration method, Macaulay's method).
	2nd	Slope and deflection of cantilever and simply supported beams under concentrated and uniformly distributed load (by Double Integration method, Macaulay's method).

	3rd	Slope and deflection of cantilever and simply supported beams under concentrated and uniformly distributed load (by Double Integration method, Macaulay's method).
	4th	Slope and deflection of cantilever and simply supported beams under concentrated and uniformly distributed load (by Double Integration method, Macaulay's method).
	5th	Slope and deflection of cantilever and simply supported beams under concentrated and uniformly distributed load (by Double Integration method, Macaulay's method).
	7. Indeterminate Beams	
12th	1st	7.1 Indeterminacy in beams, Principle of consistent deformation/compatibility,
	2nd	7.1 Indeterminacy in beams, Principle of consistent deformation/compatibility,
	3rd	7.1 Indeterminacy in beams, Principle of consistent deformation/compatibility,
	4th	Analysis of propped cantilever, fixed and two span continuous beams by principle of superposition,
	5th	Analysis of propped cantilever, fixed and two span continuous beams by principle of superposition,
13th	1st	Analysis of propped cantilever, fixed and two span continuous beams by principle of superposition,
	2nd	Analysis of propped cantilever, fixed and two span continuous beams by principle of superposition,
	3rd	Analysis of propped cantilever, fixed and two span continuous beams by principle of superposition,
	4th	SF and BM diagrams (point load and udl covering full span)
	5th	SF and BM diagrams (point load and udl covering full span)

	8. Trusses	
14th	1st	8.1 Introduction: Types of trusses
	2nd	Types of trusses
	3rd	statically determinate and indeterminate trusses
	4th	statically determinate and indeterminate trusses
	5th	degree of indeterminacy
15th	1st	degree of indeterminacy
	2nd	stable and unstable trusses
	3rd	stable and unstable trusses
	4th	stable and unstable trusses
	5th	stable and unstable trusses

P. Sankar Rao
01.08.2023

Faculty signature

1/8/23

HOD
Civil Engineering Department

Principal
Govt. Polytechnic Malkangiri