

LESSON PLAN

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

DISCIPLINE: Civil Engineering	SEMESTER: 3 rd 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: 16.08.2024 TO DATE: _____ NO. OF WEEKS: 15
Week	Class Day	Theory Topic
		1. Review Of Basic Concepts
1st	1 ST	1.1 Basic Principle of Mechanics: Force, Moment,
	2 ND	support conditions Conditions of equilibrium,
	3 RD	C.G & MI, Free body diagram
	4 TH	1.2 Review of CG and MI of different sections
		2. Simple And Complex Stress, Strain
	5 th	2.1 Simple Stresses and Strains
2nd	1 st	2.1 Simple Stresses and Strains
	2 nd	2.1 Simple Stresses and Strains
	3 rd	2.1 Simple Stresses and Strains
	4 th	2.1 Simple Stresses and Strains
	5 th	2.2 Application of simple stress and strain in engineering field
3rd	1 st	2.2 Application of simple stress and strain in engineering field
	2 nd	2.2 Application of simple stress and strain in engineering field
	3 rd	2.2 Application of simple stress and strain in engineering field
	4 th	2.3 Complex stress and strain
	5 th	2.3 Complex stress and strain
4th	1 st	2.3 Complex stress and strain

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

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

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

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