

LESSON PLAN

Semester:4th		Year:2024-25		Course: B.Tech	
Branch :Civil Engineering		Sub: Structural Analysis		Total Credit:03	
		Sub Code :			
Name of the Faculty:		Anjana Khamari			
Designation :		Assistant Professor			
Department :		Civil Engineering			
Session		2024-25			
Recommended Books		Text book:			
		1.R. C.Hibbeler,Structural analysis,Pearson Prentice Hall			
		2. K. Leet,C. M. Uang &A. M. Gilbert, Fundamentals of structural analysis. McGraw-Hill Higher Education.			
		Reference Books:			
		1. Louis F. Geschwindner&Harry H.West, Fundamentals of Structural Analysis.Wiley publication			
		2. C. S. Reddy. Basic structural analysis. McGraw Hill Education. S.S. Bhavikatti, Structural Analysis.Vikas Publishing House			
Sl. No.	Lecture No.	Topics to be covered			No. of Classes
MODULE-1					
1	Lecture-01	Concept of determinate and indeterminate structures, determination of degree of static andkinematic indeterminacy in plane frame and continuous structures.			8
2	Lecture-02	Problem Practice			
3	Lecture-03	Methods of Analysis: Equilibrium equations, compatibility requirements, Introduction to force anddisplacement methods.			
4	Lecture-04	Problem Practice			
5	Lecture-05	Analysis of propped cantilever by consistent deformation method,			
6	Lecture-06	Problem Practice			
7	Lecture-07	Analysis of fixed andcontinuous beams by Moment-Area method, Conjugate beam method and theorem of threemoments.			
8	Lecture-08	Problem Practice			
MODULE-2					
9	Lecture-09	Energy theorems and its application, Strain energy method,			8
10	Lecture-10	Virtual work method, unit loadmethod, Betti’s and Maxwell’s laws,			
11	Lecture-11	Castigliano’s theorem, concept of minimum potential energy.Theories of failure,			
12	Lecture-12	Maximum normal stress theory, maximum normal strain theory,			
13	Lecture-13	maximum shearing strain theory,maximum strain energy theory,			
14	Lecture-14	maximum distortion energy theory,			
15	Lecture-15	maximum octahedral shearingstress theory.			
16	Lecture-16	Problem Practice			
MODULE-3					
17	Lecture-17	Analysis of redundant plane trusses.			8
18	Lecture-18	Deflection of pin jointed plane trusses using strain energy method,			
19	Lecture-19	unit load method.			
20	Lecture-20	Analytical method and Williot –Mohr diagram.Introduction to space truss.			
21	Lecture-21	Arches: Introduction and classification of arches,			

22	Lecture-22	Problem Practice	
23	Lecture-23	Bending moment, shear and normal thrust of three hinged arches Suspension Cables: Three hinged stiffening girders	
24	Lecture-24	Problem Practice	
MODULE-4			
25	Lecture-25	Rolling loads and influence lines for determinate structures, simply supported beams, cantilever,	8
26	Lecture-26	Influence Line Diagram for reaction, shear force and bending moment at a section,	
27	Lecture-27	Influence Line Diagram for wheel loads, point loads and uniformly distributed loads	
28	Lecture-28	maximum bending moment envelope. Influence	
29	Lecture-29	Problem Practice	
30	Lecture-30	Line Diagram for Bending Moment, Shear Force, normal thrust and radial shear for three hinged arches.	
31	Lecture-31	Problem Practice	
32	Lecture-32	Problem Practice	

Signature of Faculty Member

Signature of HOD

PRINCIPAL