

Course Modules of the Subject Taught for the Session Feb- June 2024-25 (Even Semester)

Course Syllabi with CO's

Faculty Name :				Academic Year: 2024-25			
Department: CIVIL ENGINEERING							
Course Code	Course Title	Core/Elective	Prerequisite	Contact Hours			Total Hrs/ Sessions
				L	T	P	
	ANALYSIS OF STRUCTURES	Core	Strength of Materials	2	2	-	50
Objectives	This course will enable students to; To determine slope and deflections in beams and trusses. 2. To analyses arches and cable structures. 3. To analyses different structural systems and interpret data using slope deflection method. 4. To apply matrix operations in analyzing structures						
Topics Covered as per Syllabus							
Module-Introduction and Analysis of Plane Trusses: Structural forms, Conditions of equilibrium, Compatibility conditions, Degree of freedom, Linear and nonlinear analysis, Static and kinematic indeterminacies of structural systems, Types of trusses, Assumptions in analysis, Analysis of determinate trusses by method of joints and method of sections. Module-2 Moment area method: Derivation, Mohr's theorems, sign convention; Application of moment area method to determinate prismatic beams, beams of varying cross section; Use of moment diagram by parts. Strain Energy: Principle of virtual displacements, Principle of virtual forces, Strain energy and complimentary energy, Strain energy due to axial force, bending, shear and torsion (No numerical). Castigliano's theorems, application of Castigliano's theorems to calculate deflection of beams, trusses and frames (No numerical on unit load method). Module-3 Arches and Cables: Three-hinged circular and parabolic arches with supports at the same and different levels; Determination of normal thrust, radial shear and bending moment; Analysis of cables under point loads and UDL; Length of cables with supports at the same and different levels; Stiffening trusses for suspension cables. Module-4 Slope Deflection Method: Introduction, sign convention, development of slope deflection equation; Analysis of continuous beams including settlement of supports; Analysis of orthogonal rigid plane frames including sway frames with kinematic indeterminacy up to 3 Module-5 Matrix Methods of Structural Analysis: Definition of stiffness and flexibility methods, comparison to classical methods. Stiffness Method: Stiffness matrix, Analysis of continuous beams and plane trusses using system approach; Analysis of simple orthogonal plane frames using system approach with kinematic indeterminacy up to 3.							
List of Text Books							
Text Books 1. Reddy, C.S., Basic Structural Analysis, 3rd ed., Tata McGraw-Hill Education Pvt. Ltd., New Delhi, 2011. 2. Hibbeler, R.C., Structural Analysis, 9th edition., Pearson publications., New Delhi, 2012. 3. Thandavamoorthy, T.S., Structural Analysis, 6th edition., Oxford University press., New Delhi, 2015.							
List of Reference Books							
Charles Head Norris, John Benson Wilbur and Senol Utku., Elementary Structural Analysis, 4th edition., Tata McGraw-Hill Education Pvt. Ltd., New Delhi, 2003. 2. Hall, A. and Kabaila, A.P., Basic Concepts of Structural Analysis, Pitman Publishing, London, John Wiley & Sons, New York, 1977. 3. Wang, C.K., Intermediate Structural Analysis, McGraw-Hill International Book Co., 1985.							
URLs;							
1. https://nptel.ac.in/courses/105105166 2. https://nptel.ac.in/courses/105105166 3. https://nptel.ac.in/courses/105105166 4. https://nptel.ac.in/courses/105105109 5. https://nptel.ac.in/courses/105105109 6. https://nptel.ac.in/courses/105105109							
Course Outcomes	Student will be able to						RBT
	1 identify the different forms of structural systems and analyse the trusses.						L3

	2. Evaluate the slope and deflections in beams, frames and trusses by using moment area method	L3
	3. Analyze and determine the stress resultants in arches and cables.	L4
	4. Analyse the indeterminate structures and construct BMD AND SFD using slope deflection methods.	L4
	5. Analyse the indeterminate structures and construct BMD AND SFD using Moment Distribution Method	L4

Assessment Details (both CIE and SEE) The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50). A

The Correlation of Course Outcomes (CO's) and Program Outcomes (PO's)

Subject Code:	BCV401	TITLE: ANALYSIS OF STRUCTURES						Faculty Name:				
List of Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO-1	2	1	1	1	1	-	-	1	-	-	-	1
CO-2	2	2	1	1	1	-	-	1	-	-	-	1
CO-3	2	2	1	1	1	-	-	1	-	-	-	1
CO-4	2	2	1	1	1	-	-	1	-	-	-	1
C0-5	2	1	1	1	1	-	-	1	-	-	-	1

Note: 3 = Strong Contribution 2 = Average Contribution 1 = Weak Contribution - = No Contribution

The Correlation of Course Outcomes (CO's) and Program Specific Outcomes (PSO's)

Subject Code:	BCV401	TITLE ANALYSIS OF STRUCTURES	Faculty Name:	
List of Course Outcomes	Program Specific Outcomes			
	PSO1		PSO2	
CO-1	2		-	
CO-2	2		-	
CO-3	2		-	
CO-4	2		-	
C0-5	2			

Note: 3 = Strong Contribution 2 = Average Contribution 1 = Weak Contribution - = No Contribution