3rd Sem

BHARAT INSTITUTE OF ENGINEERING & TECHNOLOGY

SIVARAM VIHAR, GHATAKESWAR HILLS
MOHADA, BERHAMPUR (GM.)

STUDENT'S ATTENDANCE REGISTER

Time / Day	10:45 -11:35	11:35 -12:25	12:25 -1:15		
MON		✓			
WED	✓	✓			
THU			✓		
FRI	✓				

Year/ Session	15.9.22 to 22.12.22
Semester & Branch	3rd Sem, Civil department.
Subject with Code	(Th-1) Structural Mechanics
Name of the Faculty Member	Bipin kumar Tripathy

B.I.E.T.
SYLLABUS COVERAGE

TOPIC	DATE	SIGNATURE OF THE FACULTY	SIGNATURE OF THE H.O.D.
CHAPTER-I REVIEW OF BASIC CONCEPTS			
- Basic principle of mechanics: Force, Moment. Support conditions, Conditions of Equilibrium. C.G & M.I, Free body Diagram	15.09.22 16.09.22 19.09.22		
- Review of C.G & M.I of different sections.	21.09.22		
CHAPTER-II SIMPLE & COMPLEX STRESS, STRAIN			
- Simple stresses & Strain- • Introduction to stresses & strains: Mechanical properties of materials- Rigidity, Elasticity, Plasticity, Compressibility, Hardness, Toughness, Stiffness, Brittleness, Ductility, Malleability, Creep, Fatigue Tenacity, Durability	22.09.22		
•Type of stresses- Tensile, compressive, & shear stresses	22.09.22		
Type of strains- Tensile, compressive & shear strains Complementary shear stress - Diagonal/ tensile/Compressive stresses due to shear	29.09.22		12/9/22

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TOPIC	DATE	SIGNATURE OF THE FACULTY	SIGNATURE OF THE H.O.D.
Elongation & contraction, Longitudinal & Lateral strains. Poisson's Ratio. Volumetric strain, computation of stresses & strain. Poisson's Ratio, Change in dimensions & Volume etc.	26.09.22		
Hooke's Law - Elastic Constants. Derivation of relationship between the elastic constants.	28.09.22 (2)		
- Application of simple stress & strain in Engineering Field :- Behaviour of ductile & brittle materials under direct loads, stress strain curve of a ductile material	29.09.22		
Limit proportionality, Elastic limit, Yield stress, Ultimate stress, Breaking stress, Percentage elongation, Percentage reduction in area.	30.09.22		
Significance of percentage elongation & deduction in area of cross section,	12.10.22		
Deformation of prismatic bars due to uniaxial load, Deformation of prismatic bars due to self weight.	12.10.22		
	13.10.22		
- Complex stress & Strain :- Principal stresses & strains: Occurrence of normal & tangential stresses. Concept of principal stresses & principal planes	14.10.22		
	15.10.22		

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TOPIC	DATE	SIGNATURE OF THE FACULTY	SIGNATURE OF THE H.O.D.
Major & minor principal stresses & their orientations, Mohr's Circle & its application to solve problems of complex stresses.	17.10.22		
CHAPTER-3			
STRESSES IN BEAMS & SHAFTS-			
- Stresses in beams due to Bending:-			
• Bending stresses in beams- Theory of simple bending, Assumptions - Moment of resistance, Equation For Flexure, Flexural Stress distribution	19.10.22		
• Curvature of beam - position of N.A & Centroidal Axis, Flexural rigidity, Significance of section modulus.	19.10.22		
	20.10.22		
- Shear Stresses in Beams:-			
Shear stress distribution in beams of rectangular, circular & standard sections symmetrical about vertical axis.	21.10.22		
	22.10.22		
- Stresses in Shafts due to Torsion:-			
Concept of torsion, basic assumptions of pure torsion, torsion of solid & hollow circular sections, polar moment of inertia, shearing stresses, angle of twist, torsional rigidity, equation of torsion.	26.10.22 (2)		12/9/22

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SYLLABUS COVERAGE

TOPIC	DATE	SIGNATURE OF THE FACULTY	SIGNATURE OF THE H.O.D.
- Combined bending & direct stresses: • Combination of stresses, combined direct & bending stresses, Maximum & minimum stresses in sections, conditions for no tension, Limit of eccentricity, Middle third/ fourth rule, Core or kern square, rectangular & circular sections, chimneys, dams & retaining walls.	28.10.22 29.11.22		
CHAPTER-4 COLUMNS & STRUTS			
Columns & struts. Definition, short & Long Columns, End conditions. Equivalent length/ Effective length, Slenderness Ratio.	31.10.22 01.11.22		
Axially loaded short & long column, Euler's theory of long columns,	02.11.22		
Critical load for columns with different end conditions.	03.11.22		
CHAPTER-5 SHEAR FORCE & BENDING MOMENT-			
- Types of loads & beams: • Types of loads: Concentrated / Point Load Uniformly Distributed load (UDL). Types of supports: simple support, Roller support, Hinged support, Fixed support. Types of Reactions: Vertical reactions, Horizontal reactions, Moment reactions, Types of	04.11.22 05.11.22 07.11.22 09.11.22		

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TOPIC	DATE	SIGNATURE OF THE FACULTY	SIGNATURE OF THE H.O.D.
Beams based on support conditions:	09.11.22		
Calculation of support reactions using equations of static equilibrium	10.11.22		
- Shear Force & Bending Moment in beams-	11.11.22		
• Shear force & Bending Moment:	12.11.22		
Signs convention for S.F. & BM, SF & BM of general cases of determinate beams with concentrated loads & UDL only	14.11.22		
	16.11.22		
SF & BM diagram for cantilevers Simply supported beams & Over hanging beams, Position of maximum B Point of contra flexure, Relation between intensity of load, S.F & B.M	16.11.22		
	17.11.22		
CHAPTER-6			
SLOPE & DEFLECTION			
- INTRODUCTION :			
Shape & nature of elastic curve	18.11.12		
Relationship between slope, deflection & Curvature	19.11.12		
Importance of slope & deflection	21.11.12		

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SYLLABUS COVERAGE

TOPIC	DATE	SIGNATURE OF THE FACULTY	SIGNATURE OF THE H.O.D.
- Slope deflection of cantilever & simply supported beams under Concentrated & Uniformly Distributed load (By Double Integration method, Macaulay's Method)	23.11.22 (2) 24.11.22 25.11.22 26.11.22 28.11.22 30.11.22		
CHAPTER-7 INDETERMINATE BEAMS			
- Indeterminacy in beams • Principle of Consistent deformation/ Compatibility. • Analysis of propped cantilever • Fixed & two span continuous beams by principle of superposition. • SF & BM diagrame.	30.11.22 1.12.22 2.12.22 3.12.22 5.12.22 7.12.22 (2) 8.12.22 9.12.22 10.12.22		

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SYLLABUS COVERAGE

TOPIC	DATE	SIGNATURE OF THE FACULTY	SIGNATURE OF THE H.O.D.
CHAPTER - 8 TRUSSES			
• Types of trusses	12.12.22		
• Statically determinate Trusses	14.12.22 (2)		
• Statically indeterminate trusses	15.12.22		
• Degree of indeterminacy	16.12.22		
• Stable & Unstable trusses	17.12.22		
• Advantages of trusses	19.12.22		
	21.12.22 (2)		
	22.12.22		12/9/22