

PADMASHREE KRUTARTHA ACHARYA INSTITUTE OF
ENGINEERING & TECHNOLOGY, BARGARH



LESSON PLAN
Session-2023-2024

Discipline: Civil Engg. Semester: 3rd

Subject: SM

Name of the Teaching Faculty: Dilip Kumar Meher

Subject: SM No. of Days/per week class allotted 5

Semester From Date: 1/8/23 To Date: 30/11/22 No. of Weeks: 15

Week	Class Day	Theory / Practical Topics
01	1	Basic Principle of Mechanics (Force, moment etc.)
	2	Support Conditions, (CG & M)
	3	Free body diagram
	4	Review of CG & M of different section
	5	Introduction to stress & strain
02	6	Material properties of materials
	7	Plasticity, Hardness, Toughness etc.
	8	Tensile stress, Compressive & shear stresses
	9	Tensile, Compressive & shear strain
	10	Problems on above Elongation & Contraction
03	11	Poisson's ratio, volumetric strain Hooke's law etc
	12	Derivation of relationship between elastic constants.


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Week	Class Day	Theory/Practical Topics
	13	Behaviour of ductile & brittle materials under direct loads
	14	Elastic Limit, Yield stress Ultimate stress etc.
	15	Percentage elongation & reduction
04	16	Deformation of prismatic bars due to its self weights.
	17	Principal stress & strain
	18	Major & minor principal stresses
	19	Mohr's Circle solve some simple problems on above
	20	Theory of simple bending (assumptions)
05	21	Moment of resistance, Equation of flexure
	22	Curvature of beam, position of N.A & Centroidal axis
	23	Section modulus
	24	Shear stress distribution in beams (rectangular, circular sect ⁿ)


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Week	Class Day	Theory /Practical Topics
	25	Concept of torsion, basic assumptions
06	26	Angle of twist, torsional rigidity, equation of torsion
	27	Combination of stresses
11	28	Combined direct & bending stress
	29	Chimneys, dams & retaining wall
	30	Column & Struts (Definition) Short & long column
07	31	End conditions Equivalent length
	32	Theory of long columns
	33	Critical load for columns (different end conditions)
	34	Types of load
	35	Concentrated or Point load
08	36	UDL, Types of support


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Week	Class Day	Theory / Practical Topics
	37	Simple support, Roller support etc
	38	Types of beam based on support conditions
	39	Calculation of support reaction
	40	SF & BM
09	41	Sign convention for S-F, B-M
	42	SF & BM of general cases with concentrated load & UDL
	43	SF & BM diagram for cantilever, simply supported beam, overhang beam
	44	Point of Contraflexure
	45	Relation between intensity of load, SF & BM
10	46	Shape of elastic curve
	47	Nature of elastic curve
	48	Relation between slope, deflection & Curvature


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Week	Class Day	Theory / Practical Topics
	49	Relation between slope, deflection & Curvature (No derivation)
	50	Importance of slope & deflection
11	51	Slope & deflection of cantilever beam under concentrated load & UDL
	52	Slope & deflection of simply supported beam under concentrated load & UDL
11	53	Macaulay's method
	54	Simple problems
	55	Simple problems
12	56	Indeterminacy in beams
	57	Indeterminacy in beams
19	58	Principle of consistent deformation
	59	Principle of compatibility
	60	Analysis of propped cantilever

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Semester From Date: 1/8/23 To Date: 30/11/23 No. of Weeks: 15

Week	Class Day	Theory /Practical Topics
13	61	Fixed Continuous beam by Principle of Superposition
	62	Two span Continuous beam by Principle of Superposition
11	63	SF & BM diagram covering full span (Point load)
	64	SF & BM diagram covering full span (UDL)
	65	Problems on above
14	66	Types of Trusses
	67	Types of Trusses
	68	statically determinate truss
	69	statically indeterminate truss
	70	Problems on above
15	71	Degree of indeterminacy
	72	stable & unstable truss


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Subject: _____ No. of Days/per week class allotted 5

Semester From Date: 1/9/23 To Date: 30/11/23 No. of Weeks: 15

Week	Class Day	Theory /Practical Topics
1	73	Advantages of trusses
2	74	Analysis of truss (method of joints)
3	75	Analysis of truss (method of section)
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