

GANDHI ACADEMY OF TECHNOLOGY AND ENGINEERING				
DEPARTMENT OF CIVIL ENGINEERING				
LESSON PLAN				
DISCIPLINE:-CE				
SEMESTER:-4TH		FROM DATE:-02.01.2024		TO DATE:-23.04.2024
Name of Teaching Faculty: GURU PRASAD PATRO				
SUBJECT:- STRUCTURAL DESIGN-I				
NO. OF PERIOD/PER WEEK CLASS ALLOTTED:-5				
TOTAL NO. OF CLASS AVAILABLE IN SEM:-75				
SL NO.	WEEK	CLASS DATE	NO. OF CLASS/DAY	TOPICS
1	Week-01	02.01.2024	1	Objectives of design and detailing. State the different methods of design of concrete structures
		03.01.2024	1	Introduction to reinforced concrete, R.C. section their behavior, grades of concrete and steel. Permissible stresses, assumption in W.S.M.
		04.01.2024	1	Flexural design and analysis of single reinforced sections from first principles.
		05.01.2024	1	Concept of under reinforced, over reinforced and balanced sections.
2	Week-02	08.01.2024	1	Advantages and disadvantages of WSM, reasons for its obsolescence
		09.01.2024	1	Definition, Advantages of LSM over WSM, IS code suggestions regarding design philosophy.
		10.01.2024	1	Types of limit states, partial safety factors for materials strength, characteristic strength, characteristic load, design load, loading on structure as per I.S. 875
		11.01.2024	1	Study of IS specification regarding spacing of reinforcement in slab, cover to reinforcement in slab, beam column & footing, minimum reinforcement in slab, beam & column, lapping, anchorage, effective span for beam & slab.
		12.01.2024	1	Limit state of collapse (flexure), Assumptions
3	Week-03	15.01.2024		HOLIDAY
		16.01.2024	1	Stress-Strain relationship for concrete and steel, neutral axis
		17.01.2024	1	Stress block diagram and strain diagram for singly reinforced section
		18.01.2024	1	Concept of under- reinforced, over- reinforced and limiting section
		19.01.2024		Neutral axis co-efficient, limiting value of moment of resistance
4	Week-04	22.01.2024	1	Limiting percentage of steel required for limiting singly R.C. section.
		23.01.2024		HOLIDAY
		24.01.2024	1	Determination of design constants
		25.01.2024	1	moment of resistance and area of steel for rectangular sections
		26.01.2024		HOLIDAY
5	Week-05	29.01.2024	1	Solved problems on singly reinforced section
		30.01.2024	1	Solved problems on singly reinforced section
		31.01.2024	1	Necessity of doubly reinforced section
		01.02.2024	1	Design of doubly reinforced rectangular section
		02.02.2024	1	Design of doubly reinforced rectangular section
6	Week-06	05.02.2024	1	Solved problems on doubly reinforced section
		06.02.2024	1	Solved problems on doubly reinforced section
		07.02.2024	1	Nominal shear stress in R.C. section, design shear strength of concrete, maximum shear stress, design of shear reinforcement, minimum shear reinforcement, forms of shear reinforcement.
		08.02.2024	1	Bond and types of bond, bond stress, check for bond stress, development length in tension and compression, anchorage value for hooks 90° bend and 45° bend standards lapping of bars, check for development length.

		09.02.2024	1	Numerical problems on deciding whether shear reinforcement is required or not, check for adequacy of the section in shear.
7	Week-07	12.02.2024	1	Design of shear reinforcement; Minimum shear reinforcement in beams.
		12.02.2024	1	General features of T-Beams
		14.02.2024		HOLIDAY
		15.02.2024	1	Advantages, effective width of flange as per IS: 456-2000 code provisions.
		16.02.2024		Analysis of singly reinforced T-Beam
8	Week-08	19.02.2024	1	Numerical problems
		20.02.2024	1	Strain diagram & stress diagram
		21.02.2024	1	Depth of neutral axis, moment of resistance of T-beam section with neutral axis lying within the flange.
		22.02.2024	1	Depth of neutral axis, moment of resistance of T-beam section with neutral axis lying within the flange.
		23.02.2024	1	Simple numerical problems on deciding effective flange width.
9	Week-09	26.02.2024	1	Simple numerical problems on deciding effective flange width.
		27.02.2024	1	Simple numerical problems on deciding effective flange width.
		28.02.2024	1	Numerical problems on T-Beam
		29.02.2024	1	Numerical problems on T-Beam
		01.03.2024	1	Design of simply supported one-way slabs for flexure, check for deflection control and shear.
10	Week-10	04.03.2024	1	Design of simply supported one-way slabs for flexure, check for deflection control and shear.
		05.03.2024		HOLIDAY
		06.03.2024	1	Numerical problems
		07.03.2024	1	Design of one-way cantilever slabs and cantilever chajjas for flexure, check for deflection control and check for development length and shear.
		08.03.2024		HOLIDAY
11	Week-11	11.03.2024	1	Design of one-way cantilever slabs and cantilever chajjas for flexure, check for deflection control and check for development length and shear.
		12.03.2024	1	Numerical problems
		13.03.2024	1	Numerical problems
		14.03.2024	1	Design of two-way simply supported slabs for flexure with corner free to lift.
		15.03.2024	1	Design of two-way simply supported slabs for flexure with corner free to lift.
12	Week-12	18.03.2024	1	Numerical problems
		19.03.2024	1	Design of dog-legged staircase Detailing of reinforcement in stair spanning longitudinally.
		20.03.2024	1	Numerical problems
		21.03.2024	1	Assumptions in limit state of collapse- compression.
		22.03.2024	1	Definition and classification of columns
13	Week-13	25.03.2024		HOLIDAY
		26.03.2024		HOLIDAY
		27.03.2024	1	effective length of column. Specification for minimum reinforcement
		28.03.2024	1	cover, maximum reinforcement, number of bars in rectangular, square and circular sections, diameter and spacing of lateral ties.
		29.03.2024		HOLIDAY
14	Week-14	01.04.2024		HOLIDAY
		02.04.2024	1	cover, maximum reinforcement, number of bars in rectangular, square and circular sections, diameter and spacing of lateral ties.
		03.04.2024	1	Analysis and design of axially loaded short square, rectangular and circular columns
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		05.04.2024	1	Numerical problems
15	Week-15	08.04.2024	1	Types of footing
		09.04.2024	1	Design of isolated square column footing of uniform thickness for flexure and shear.
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		11.04.2024		HOLIDAY
		12.04.2024	1	Design of isolated square column footing of uniform thickness for flexure and shear.
16	Week-16	15.04.2024	1	Numerical problems
		16.04.2024	1	Numerical problems
		17.04.2024		HOLIDAY
		18.04.2024	1	Numerical problems
		19.04.2024	1	Numerical problems
17	Week-17	22.04.2024	1	REVISION
		23.04.2024	1	REVISION