LESSON PLAN FOR SUMMER SESSION (2023-24)

PROGRAMME : CIVIL ENGINEERING	NAME OF THE FACULTY: MR. SUBRAT KUMAR PANIGRAHI
COURSE NAME : STRUCTURAL DESIGN-I	SESSION : 2023-24
COURSE CODE : TH.1	DATE : 16.01.2024 To 26.04.2024
SEMESTER : 4TH	
PERIODS/WEEK: 5	
TOTAL PERIODS:75	

WEEK	PERIODS	UNITS	TOPICS
			Working stress method (WSM)
1st	1	1	**1.1 Objectives of design and detailing. State the different methods of design of concrete structures.**
	2		**1.2 Introduction to reinforced concrete, R.C. sections their behavior, grades of concrete and steel. Permissible**
	3		**1.3 Flexural design and analysis of single reinforced sections from first principles.**
	4		**1.4 Concept of under reinforced, over reinforced and balanced sections.**
	5		**1.5 Advantages and disadvantages of WSM, reasons for its obsolescence.**
2nd	6	2	2.1 Definition, Advantages of LSM over WSM, IS code suggestions regarding design philosophy.
	7		2.2 Types of limit states, partial safety factors for materials strength, characteristic strength, characteristic load, design load, loading on structure as per I.S. 875
	8		2.3 Study of I.S 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.
	9	3	3.1 Limit state of collapse (flexure), Assumptions, Stress-Strain relationship for concrete and steel, neutral axis, stress block diagram and strain diagram for singly reinforced section.
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3rd	11		3.1 Limit state of collapse (flexure), Assumptions, Stress-Strain relationship for concrete and steel, neutral axis, stress block diagram and strain diagram for singly reinforced section.
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	13		3.2 Concept of under- reinforced, over-reinforced and limiting section, neutral axis co-efficient, limiting value of moment of resistance and limiting percentage of steel required for limiting singly R.C. section.
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4th	16		
	17		3.3 Analysis and design: determination of design constants, moment of resistance and area of steel for rectangular sections
	18		
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5th	21		3.4 Necessity of doubly reinforced section, design of doubly reinforced rectangular section
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	24	4	4.1 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.
	25		4.2 Bond and types of bond, bond stress, check for bond stress, development length in tension and compression, anchorage value for hooks 900 bend and 450 bend standards lapping of bars, check for development length.
6th	26		4.3 Numerical problems on deciding whether shear reinforcement is required or not, check for adequacy of the section in shear. Design of shear reinforcement; Minimum shear reinforcement in beams (Explain through examples only).
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	28	5	5.1 General features, advantages, effective width of flange as per IS: 456-2000 code provisions.
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7th	31		
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	33		5.2 Analysis of singly reinforced T-Beam, strain diagram & stress diagram, depth of neutral axis, mom
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8th	36		
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	38		5.3 Simple numerical problems on deciding effective flange width. (Problems only on finding moment of resistance of T-beam section when N.A. lies within or up to the bottom of flange shall be asked in written examination)..
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9th	41		
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	43	6	6.1 Design of simply supported one-way slabs for flexure check for deflection control and shear.
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10th	46		6.2 Design of one-way cantilever slabs and cantilevers chajjas for flexure check for deflection control and check for development length and shear.
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	49		6.3 Design of two-way simply supported slabs for flexure with corner free to lift.
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11th	52		6.4 Design of dog-legged staircase
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	55		6.5 Detailing of reinforcement in stairs spanning longitudinally.
12th	56		6.5 Detailing of reinforcement in stairs spanning longitudinally.
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	58		7.1 Assumptions in limit state of collapse- compression.
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13th	61		7.1 Assumptions in limit state of collapse- compression.
	62		7.2 Definition and classification of columns, effective length of column. Specification for minimum reinforcement; cover, maximum reinforcement, number of bars in rectangular, square and circular sections, diameter and spacing of lateral ties.
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	64		Specification for minimum reinforcement; cover, maximum reinforcement, number of bars in rectangular, square and
	65		circular sections, diameter and spacing of lateral ties.
14th	66	7	7.3 Analysis and design of axially loaded short square, rectangular and circular columns (with lateral ties only).
	67		7.3 Analysis and design of axially loaded short square, rectangular and circular columns (with lateral ties only).
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	69		7.4 Types of footing, Design of isolated square column footing of uniform thickness for flexure and shear.
	70		7.4 Types of footing, Design of isolated square column footing of uniform thickness for flexure and shear.
15th	71		7.4 Types of footing, Design of isolated square column footing of uniform thickness for flexure and shear.
	72		**Doubt Clearing Class & Previous year question Paper discussion.**
	73		**Doubt Clearing Class & Previous year question Paper discussion.**
	74		**Doubt Clearing Class & Previous year question Paper discussion.**
	75		**Doubt Clearing Class & Previous year question Paper discussion.**

Concern faculty 8/1/24

HOD 12/1/24
Civil engineering

Academic Coordinator 12/1/24.
GP Nabarangpur

13.01.24.
Principal
GP Nabarangpur