LESSON PLAN

Discipline: Civil	Semester: 4th	Semester from: 16.01.24 to 26.04.24 No. of weeks:17	
Subject: Structural Design – I Th.1	No. of days/per week Class Allotted: 5	Name of the teaching faculty: Sushree Souravi Rout	
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Week	Class/Day	Theory Topics	
1 st	1 st 1111 11 12 10 10 10 10 10 10 10 10 10 10 10 10 10	CH 1:Working stress method (WSM)	
	2 nd	1.1 Objectives of design and detailing. State the different methods of design of concrete structures.	
	3 rd	-DO-	
	4 th	-DO+	
	S th	1.2 Introduction to reinforced concrete, R.C. sections their behavior,	
2 nd	1 st	grades of concrete and steel.	
	2 nd	Permissible stresses, assumption in W.S.M.	
	3 rd	1.3 Flexural design and analysis of single reinforced sections from first principles.	
	4 th	1.4 Concept of under reinforced, over reinforced and balanced sections.	
	5 th	-DO-	
3 rd	1 st	1.5 Advantages and disadvantages of WSM, reasons for its obsolescence:	
	2 nd	-DO-	
	3 rd 3814,78551	CH:2 Philosophy Of Limit State Method (LSM)	
	4 th	 Definition, Advantages of LSM over WSM, IS code suggestions regarding design philosophy 	
	5th	-DO- THE PARTY AND THE PARTY A	
Ath Bros at	1 state of the state of the	2.2 Types of limit states, partial safety factors for materials strength, characteristic strength,	
	2 nd	characteristic load, design load, loading on structure as per I.S. 875	
	3 rd	2.3 Study of I.S specification regarding spacing of reinforcement in slab, cover to reinforcement in slab, beam column & footing,	
	4ex Carrier (Are Design Foreign	minimum reinforcement in slab, beam & column,	
	5 th	lapping, anchorage, effective span for beam & slab.	
5 th	1 st	CH 3: Analysis and Design of Single and Double Reinforced Sections (LSM)	
	2 nd	-00-	

limiting section, neutral axis co-entitlein, intring uniting percentage of steel required for limiting singly R.C. section. 2nd -DO- 3rd -DO- 4th -DO- 5th -DO- 3rd -DO- 2nd -DO- 3rd -DO- 4th -DO- 3rd -DO- 4th -DO- 3rd -DO- 4th -DO- 3rd -DO- 4th -DO- 4th -DO- 5th -DO- 5th -DO- 5th -DO- 4th		3 rd	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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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. 2nd -DO- 3rd -DO- 4th -DO- 5th -DO- 3rd -DO- 2nd -DO- 3rd -DO- 4th -DO- 3rd -DO- 3rd -DO- 4th -DO- 3rd -DO- 3rd -DO- 4th -DO- 5th -DO- 4th -DO- 5th -DO- 4th -DO- 5th -DO- 4th -DO- 5th -DO- 5th -DO- 5th -DO- 5th -DO- 5th -DO- 5th -DO- 4th -DO- 5th -DO- 4th -DO- 5th -DO- 5th -DO- 4th -DO- 5th -DO- 4th -DO- 5th -DO- 4th -DO- 5th -DO- 4th -DO- 4th -DO- 4th -DO- 4th -DO- 3rd -DO- 4th -DO- 4th -DO- 3rd -DO- 4th -DO- 3rd			1 (3)
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	4 th	CH 5: Analysis and Design of T-Beam (LSM)
	5 th	5.1 General features, advantages, effective width of
2.010		flange as per IS: 456-2000 code provisions.
11 th	1 st	-DO-
	2 nd	5.2 Analysis of singly reinforced T-Beam, strain diagram & stress diagram, depth of neutral axis, moment of resistance of T-beam section with neutra axis lying within the flange.
	3 rd	-DO-
	Annual model espins	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).
	5 th	-DO-
12 th	1 at	-DO-
	2 nd	CH 6: Analysis and Design of Slab and Stair case (LSM
	3'#	6.1 Design of simply supported one-way slabs for flexure check for deflection control and shear.
	4 th	-DO-
	5 th	-DO-
	1"	 6.2 Design of one-way cantilever slabs and cantilevers chajjas for flexure check for deflection control and check for development length and shear.
	2 nd	-DO-
	3 rd	6.3 Design of two-way simply supported slabs for flexure with corner free to lift.
	4 th	-DO-
	5 th	-DO-
14 th	1ª	6.4 Design of dog-legged staircase
	2 nd	-DO-
	3'0	-DO-
	4 th	6.5 Detailing of reinforcement in stairs spanning longitudinally.
	5 th	CH 7: Design of Axially loaded columns and Footings (LSM)
1.5 th	1 st	7.1 Assumptions in limit state of collapse- compression.
	2 nd	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.
	3 rd	-DO-
	. 4 th	-00-



	5th literature to other	7.3 Analysis and design of axially loaded short square, rectangular and circular columns (with lateral ties only).
16 th	1 st	-DO-
	2 nd	-DO-
	3 rd	-DO-
	4 th	7.4 Types of footing, Design of isolated square column footing of uniform thickness for flexure and shear.
	5 th	-DO-
17 th	1 st	-DO-
	2 nd	REVISION
	3 rd	REVISION
	4 th	REVISION
	5 th	REVISION

Signature of faculty