

LESSON PLAN FOR SUMMER 2022

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DISCIPLINE:- CIVIL ENGG.	DATE	SEMESTER:-4TH SEM SEC B	NAME OF THE TEACHING FACULTY:-SIMADRI KUMAR BAL(PTRG)
SUBJECT:- STRUCTURAL DESIGN-I ,TH.1		NO. OF DAYS/PER WEEK CLASS ALLOTTED:- 5T	SEMESTER - 4TH Sem SEC A FROM DATE-10/03/2022 TO DATE- 10/06/2022 NO. OF WEEKS-14WEEKS
WEEK		CLASS DAY	THEORY TOPICS
			1. WORKING STRESS METHOD (WSM)(5P)
1st WEEK	3/10/2022	3rd	1.1 Objectives of design and detailing. State the different methods of design of concrete structures
	3/11/2022	4th	1.2 Introduction to reinforced concrete, R.C. sections their behavior, grades of concrete and steel. Permissible stresses, assumption in W.S.M.
	3/12/2022	5th	1.3 Flexural design and analysis of single reinforced sections from first principles
2nd WEEK	3/14/2022	1st	1.4 Concept of under reinforced, over reinforced and balanced sections
	3/15/2022	2nd	1.5 Advantages and disadvantages of WSM, reasons for its obsolescence
			2. Philosophy Of Limit State Method (LSM) (3P)
	3/17/2022	3rd	2.1 Definition, Advantages of LSM over WSM, IS code suggestions regarding design philosophy.
3rd WEEK	3/21/2022	1st	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
	3/22/2022	2nd	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.
			3. Analysis and Design of Single and Double Reinforced Sections (LSM) (15P)
	3/24/2022	3rd	3.1 Limit state of collapse (flexure), Assumptions, Stress-Strain relationship for concrete and steel
	3/25/2022	4th	3.1 Neutral axis, stress block diagram and strain diagram for singly reinforced section.
	3/26/2022	5th	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
4th WEEK	3/28/2022	1st	3.3 Analysis and design: determination of design constants, moment of resistance and area of steel for rectangular sections
	3/29/2022	2nd	Problem practice
	3/31/2022	3rd	Problem practice
	4/2/2022	5th	Problem practice
	4/4/2022	1st	Problem practice
	4/5/2022	2nd	Problem practice

5th WEEK	4/7/2022	3rd	3.4 Necessity of doubly reinforced section, design of doubly reinforced rectangular section
	4/8/2022	4th	Problem practice
	4/9/2022	5th	Problem practice
6th WEEK	4/11/2022	1st	Problem practice
	4/12/2022	2nd	Problem practice
	4/16/2022	5th	Problem practice
7th WEEK			4. Shear, Bond and Development Length (LSM) (4P)
	4/18/2022	1st	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.
	4/19/2022	2nd	4.2 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.
	4/21/2022	3rd	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).
	4/22/2022	4th	Problem practice
			5. Analysis and Design of T-Beam (LSM) (15P)
	4/23/2022	5th	5.1 General features, advantages
8th WEEK	4/25/2022	1st	Effective width of flange as per IS: 456-2000 code provisions.
	4/26/2022	2nd	5.2 Analysis of singly reinforced T-Beam, strain diagram & stress diagram .
	4/28/2022	3rd	Depth of neutral axis, moment of resistance of T-beam section with neutral axis lying within the flange.
	4/29/2022	4th	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)..
	4/30/2022	5th	Problem practice
9th WEEK	5/2/2022	1st	Problem practice
	5/5/2022	3rd	Problem practice
	5/6/2022	4th	Problem practice
	5/7/2022	5th	Problem practice
10th WEEK	5/9/2022	1st	Problem practice
	5/10/2022	2nd	Problem practice
	5/12/2022	3rd	Problem practice
	5/13/2022	4th	Problem practice
			6. Analysis and Design of Slab and Stair case (LSM) (15P)
	5/14/2022	5th	6.1 Design of simply supported one-way slabs for flexure check for deflection control and shear.
	5/17/2022	2nd	Problem practice
	5/19/2022	3rd	Problem practice

11th WEEK	5/20/2022	4th	6.2 Design of one-way cantilever slabs and cantilevers chajjas for flexure check for deflection control and check for development length and shear.
	5/21/2022	5th	Problem practice
12th WEEK	5/23/2022	1st	Problem practice
	5/24/2022	2nd	6.3 Design of two-way simply supported slabs for flexure with corner free to lift.
	5/26/2022	3rd	Problem practice
	5/27/2022	4th	Problem practice
	5/28/2022	5th	6.4 Design of dog-legged staircase
13th WEEK	5/31/2022	2nd	Problem practice
	6/2/2022	3rd	Problem practice
	6/3/2022	4th	6.5 Detailing of reinforcement in stairs spanning longitudinally.
	6/4/2022	5th	Problem practice
14th week	6/6/2022	1st	Problem practice
			7.Design of Axially loaded columns and Footings (LSM) (18P)
	6/7/2022	2nd	7.1 Assumptions in limit state of collapse- compression.
	6/9/2022	3rd	7.2 Definition and classification of columns, effective length of column.
	6/10/2022	4th	Specification for minimum reinforcement; cover, maximum reinforcement, number of bars in rectangular, square and circular sections, diameter and spacing of lateral ties.
EXTRA CLASSES REQUIRED			7.3 Analysis and design of axially loaded short square columns with lateral ties only
			Problem practice
			Problem practice
			7.3 Analysis and design of axially loaded short rectangular columns with lateral ties only
			Problem practice
			Problem practice
			7.4 Types of footing
			Design of isolated square column footing of uniform thickness for flexure and shear.
			Problem practice
			Problem practice
		Problem practice	
		Problem practice	