

**LESSON PLAN-SUMMER 2023**  
**SWAMI VIVEKANANDA SCHOOL OF ENGG & TECH, BBSR**

Discipline- CIVIL DEPARTMENT	Semester- 4TH	Name of teaching faculty- <i>Pratiba Marjari Barik</i>
Subject- SD-I	No class alloted/ per week -6	SEM From date- 14/02/2023 to 25/05/2023 No of weeks- 17
Week	Class day	Theory Topics
3RD	2/14/2023	<b>1. Working stress method (WSM)</b>
	2/15/2023	1.1. Objectives of design and detailing. State the different methods of design of concrete structures.
	2/16/2023	1.2. Introduction to reinforced concrete, R.C. sections their behavior, grades of concrete and steel. Permissible stresses, assumption in W.S.M.
	2/17/2023	1.3. Flexural design and analysis of single reinforced sections from first principles.
4TH	2/20/2023	1.4. Concept of under reinforced, over reinforced and balanced sections.
	2/21/2023	1.4. Concept of under reinforced, over reinforced and balanced sections.
	2/22/2023	1.5. Advantages and disadvantages of WSM, reasons for its obsolescence
	2/23/2023	<b>2. Philosophy Of Limit State Method (LSM)</b>
	2/24/2023	2.1. Definition, Advantages of LSM over WSM, IS code suggestions regarding design philosophy.
	2/25/2023	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
5TH	2/27/2023	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.
	2/28/2023	<b>3. Analysis and Design of Single and Double Reinforced Sections (LSM)</b>
1ST	3/1/2023	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
	3/2/2023	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.
	3/3/2023	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.
	3/4/2023	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.
	3/6/2023	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.
	3/7/2023	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	3/9/2023	3.2. Concept of under- reinforced, over-reinforced and limiting section, neutral axis depth coefficient, limiting value of moment of resistance and limiting percentage of steel for limiting singly R.C. section.
	3/10/2023	3.2. Concept of under- reinforced, over-reinforced and limiting section, neutral axis depth coefficient, limiting value of moment of resistance and limiting percentage of steel for limiting singly R.C. section.
	3/11/2023	Numericals
3RD	3/13/2023	Numericals
	3/14/2023	3.2. Concept of under- reinforced, over-reinforced and limiting section, neutral axis depth coefficient, limiting value of moment of resistance and limiting percentage of steel required for limiting singly R.C. section.
	3/15/2023	3.3. Analysis and design: determination of design constants, moment of resistance and area of steel for rectangular sections
	3/16/2023	3.3. Analysis and design: determination of design constants, moment of resistance and area of steel for rectangular sections
	3/17/2023	3.3. Analysis and design: determination of design constants, moment of resistance and area of steel for rectangular sections
	3/18/2023	3.3. Analysis and design: determination of design constants, moment of resistance and area of steel for rectangular sections
	4TH	3/20/2023
3/21/2023		3.4. Necessity of doubly reinforced section, design of doubly reinforced rectangular section
3/22/2023		3.4. Necessity of doubly reinforced section, design of doubly reinforced rectangular section
3/23/2023		<b>4. Shear, Bond and Development Length (LSM)</b>
3/24/2023		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.
3/25/2023		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.
5TH	3/27/2023	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.
	3/28/2023	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.
	3/29/2023	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.
	3/30/2023	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).
	3/31/2023	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).
1ST	4/1/2023	<b>5. Analysis and Design of T-Beam (LSM)</b>
	4/3/2023	5.1 General features, advantages, effective width of flange as per IS: 456-2000 code provisions.

4/4/23

4/5/2023

4/6/23

	4/4/2023	5.1 General features, advantages, effective width of flange as per IS: 456-2000 code provisions.
	4/5/2023	5.1 General features, advantages, effective width of flange as per IS: 456-2000 code provisions.
	4/6/2023	5.1 General features, advantages, effective width of flange as per IS: 456-2000 code provisions.
	4/7/2023	5.1 General features, advantages, effective width of flange as per IS: 456-2000 code provisions.
	4/8/2023	5.2 Analysis of singly reinforced T-Beam, strain diagram & stress diagram, depth of neutral axis, moment of resistance of T-beam section with neutral axis lying within the flange.
3RD	4/10/2023	5.2 Analysis of singly reinforced T-Beam, strain diagram & stress diagram, depth of neutral axis, moment of resistance of T-beam section with neutral axis lying within the flange.
	4/11/2023	5.2 Analysis of singly reinforced T-Beam, strain diagram & stress diagram, depth of neutral axis, moment of resistance of T-beam section with neutral axis lying within the flange.
	4/12/2023	5.2 Analysis of singly reinforced T-Beam, strain diagram & stress diagram, depth of neutral axis, moment of resistance of T-beam section with neutral axis lying within the flange.
	4/13/2023	5.2 Analysis of singly reinforced T-Beam, strain diagram & stress diagram, depth of neutral axis, moment of resistance of T-beam section with neutral axis lying within the flange.
	4/14/2023	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)..
	4/15/2023	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)..
	4/17/2023	INTERNAL ASSESSMENT
	4/18/2023	INTERNAL ASSESSMENT
4TH	4/19/2023	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)..
	4/20/2023	6. Analysis and Design of Slab and Stair case (LSM)
	4/21/2023	6.1 Design of simply supported one-way slabs for flexure check for deflection control and shear.
	4/22/2023	6.1 Design of simply supported one-way slabs for flexure check for deflection control and shear.
5TH	4/24/2023	6.1 Design of simply supported one-way slabs for flexure check for deflection control and shear.
	4/25/2023	6.2 Design of one-way cantilever slabs and cantilevers chajjas for flexure check for deflection control and check for development length and shear.
	4/26/2023	6.2 Design of one-way cantilever slabs and cantilevers chajjas for flexure check for deflection control and check for development length and shear.
	4/27/2023	6.2 Design of one-way cantilever slabs and cantilevers chajjas for flexure check for deflection control and check for development length and shear.
	4/28/2023	6.3 Design of two-way simply supported slabs for flexure with corner free to lift.
	4/29/2023	6.3 Design of two-way simply supported slabs for flexure with corner free to lift.
		5/1/2023
	5/2/2023	6.3 Design of two-way simply supported slabs for flexure with corner free to lift.

1ST	5/3/2023	6.3 Design of two-way simply supported slabs for flexure with corner	
	5/4/2023	6.4 Design of dog-legged staircase	
	5/5/2023	6.4 Design of dog-legged staircase	
	5/6/2023	6.4 Design of dog-legged staircase	
2ND	5/8/2023	6.5 Detailing of reinforcement in stairs spanning longitudinally.	
	5/9/2023	6.5 Detailing of reinforcement in stairs spanning longitudinally.	
	5/10/2023	<b>7. Design of Axially loaded columns and Footings (LSM)</b>	
	5/11/2023	7.1 Assumptions in limit state of collapse- compression.	
	5/12/2023	7.1 Assumptions in limit state of collapse- compression.	
	5/13/2023	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.	
3RD	5/15/2023	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.	
	5/16/2023	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.	
	5/17/2023	7.4 Types of footing, Design of isolated square column footing of uniform thickness for flexure and shear.	
	5/18/2023	7.4 Types of footing, Design of isolated square column footing of uniform thickness for flexure and shear.	
	5/19/2023		
	5/20/2023		Revision
	5/22/2023		Revision
4TH			Revision

HOD

*Fingh*

DEAN ACADEMIC

PRINCIPAL

H.O.D  
Civil Engineering  
S.V S.E.T., Madanpur

PRINCIPAL  
Swami Vivekananda School of Engg. & Tec  
Madanpur, BBSR