

LESSON PLAN

Academic Session :- 2024-2025 (2025 Summer)

Discipline: Civil.Engineering

Name of teaching faculty: Miss.Anita Pradhan

Subject: Structural Design-1(TH1)

Semester from Date:04/02/2025 to 17/05/2025

Semester: 4th

No. of weeks: 14

5P/week

No. of Days/ week class allotted: 05period per week(
Tuesday-1P, Wednesday-1P, Thursday-1P, Friday-2P)

Total period: 75

MONTH	Week	DATE	DAYS/PERIOD	Syllabus to be covered	NO. OF PERIODS AVAILABLE	
				CHAPTER:1:WORKING STRESS METHOD(WSM)5P	5	
F E B R U A R Y	2ND	04-02-2025	Tue	1.1.Objective of design and detailing. state the different method of design of concrete structures.	1	
		05-02-2025	Wed	1.2.Introduction to reinforced concrete, R.C. sections their behaviour, grades of concrete and steel. Permissible stresses, assumption in WSM	1	
		06-02-2025	Thu	1.3. Flexural design and analysis of single reinforced sections from first principles.	1	
		07-02-2025	Fri	1.4.Concept of under reinforced, over reinforced and balanced sections	1	
		07-02-2025	Fri	1.5. Advantages and disadvantages of WSM, reasons for its obsolescence	1	
					CHAPTER:2: Philosophy of limit state Method(LSM). 3P	3
	3RD	11-02-2025	Tue	2.1. Definition, Advantages of LSM over WSM, IS code suggestions regarding design philosophy	1	
		12-02-2025	Wed	2.2. Type of limit states, partial safety factors for material strength, characteristic load, design load,loading on structure as per I.S. 875	1	
		13-02-2025	Thu	2.3.Study of I.S. specification regarding spacing of reinforcement in slab, cover to reinforcement in slab, beam column and footing, minimum reinforcement in slab, beam and column lapping, anchorage, effective span for beam and slab	1	
					CHAPTER:3: Analysis and Design of Single and double Reinforced section (LSM) 15P	15
		14-02-2025	Fri	3.1.limit state of collapse(flexure), Assumptions, Stress-Strain relationship for concrete	1	
		14-02-2025	Fri	3.2.Stress-Strain relationship for steel, neutral axis, stress block diagram for single reinforced section	1	
		18-02-2025	Tue	3.3.Stain diagram for singly reinforced section; Concept of under reinforced, over reinforced and limiting section.	1	

MARCH	4TH	19-02-2025	Wed	3.4. Neutral axis coefficient, limiting value of moment of resistance.	1
		20-02-2025	Thu	3.5. limiting percentage of steel required for limiting single R.C. section	1
		21-02-2025	Fri	3.6. Analysis and design: Determination of design constants. Moment of resistance and area of steel for rectangular sections	1
		21-02-2025	Fri	3.7. Numericals	1
	5TH	25-02-2025	Tue	3.8. Numericals	1
		27-02-2025	Thu	3.9. Numericals	1
		28-02-2025	Fri	3.10. Numericals	1
		28-02-2025	Fri	3.11. Necessity of doubly reinforced section, Design of doubly reinforced rectangular section	1
	2ND	04-03-2025	Tue	3.12. Numericals	1
		06-03-2025	Thu	3.13. Numericals	1
		07-03-2025	Fri	3.14. Numericals	1
		07-03-2025	Fri	3.15. Numericals.	1
				CHAPTER: 4: Shear, Bond and Development length(LSM)-04P	4
	3RD	11-03-2025	Tue	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	1
		12-03-2025	Wed	4.2. Bond and types of bond, bond stress, check for bond stress, development length in tension and compression	1
		13-03-2025	Thu	4.3. Anchorage value for hooks 90 degree bend and 45 degree bend standards lapping of bars, check for development length.	1
	4TH	18-03-2025	Tue	4.4. 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)	1
				CHAPTER:5: ANALYSIS AND DESIGN OF T-BEAM(LSM)-15P	15
		19-03-2025	Wed	5.1. General features, advantages	1
		20-03-2025	Thu	5.2. Effective width of flange as per I.S. 456-2000 code provisions	1
	5TH	21-03-2025	Fri	4.2. Buckling class of cross sections	1
21-03-2025		Fri	5.3. Analysis of singly reinforced T-beam	1	
25-03-2025		Tue	5.4. stress diagram and strain diagram	1	
26-03-2025		Wed	5.5. Depth of neutral axis	1	
27-03-2025		Thu	5.6. Moment of resistance of T-beam section with neutral axis lying within the flange	1	
28-03-2025		Fri	5.7. 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)	1	
28-03-2025		Fri	5.8. Numericals	1	
	02-04-2025	Wed	5.9. Numericals	1	

APRIL	1ST	03-04-2025	Thu	5.10. Numericals	1
		04-04-2025	Fri	5.11.Numericals	1
		04-04-2025	Fri	5.12.Numericals	1
	2ND	08-04-2025	Tue	5.13 Numericals	1
		09-04-2025	Wed	5.14. Numericals	1
		10-04-2025	Thu	5.15.Class test	1
				CHAPTER:6.ANALYSIS AND DESIGN OF SLAB AND STAIR CASE(LSM)-15P	15
		11-04-2025	Fri	6.1.Design of simply supported one -way slabs for flexure check for deflection control and shear.	1
		11-04-2025	Fri	6.2.Numericals	1
		15-04-2025	Tue	6.3.Numericals	1
	3RD	16-04-2025	Wed	6.4.Design of one-way cantilever slabs and cantilevers chajjas for flexure check deflection control	1
		17-04-2025	Thu	6.5.Check for development length and shear	1
		22-04-2025	Tue	6.6.Numericals	1
	4TH	23-04-2025	Wed	6.7.Numericals	1
		24-04-2025	Thu	6.8.Design of two-way simply supported slabs for flexure with corner free to lift	1
		25-04-2025	Fri	6.9.Numericals	1
		25-04-2025	Fri	6.10.Design of dog-legged staircase	1
		29-04-2025	Tue	6.11. Numericals	1
	5TH	30-04-2025	Wed	6.12. Numericals	1
		01-05-2025	Thu	6.13. Detailing of reinforcement in stairs spanning longitudinally	1
	MAY	1ST	02-05-2025	Fri	6.14. Numericals
02-05-2025			Fri	6.15. Numericals	1
				CHAPTER:7.DESIGN OF AXIALLY LOADED COLUMNS AND FOOTINGS(LSM)18P	18
2ND		06-05-2025	Tue	7.1. Assumption in limit state of collapse-compression	1
		07-05-2025	Wed	7.2.Definition and classification of columns	1
		08-05-2025	Thu	7.3.effective length of column, cover	1
		09-05-2025	Fri	7.4.Specification for minimum reinforcements	1
		09-05-2025	Fri	7.5.Maximum reinforcement	1
3RD		13-05-2025	Tue	7.6.Number of bars in rectangular, square section	1
		14-05-2025	Wed	7.7.Number of bars in Circular sections	1
		15-05-2025	Thu	7.8.Diameter and spacing of lateral ties	1
		16-05-2025	Fri	7.9.Analysis and design of axially loaded short square, rectangular columns	1
		16-05-2025	Fri	7.10.Analysis and design of axially loaded circular columns(with lateral ties only)	1
E X T R A C L A				7.11.Type of footing	1
				7.12.Design of isolated square column footing of uniform thickness for flexure and shear	1
				7.13.Design of isolated square column footing of uniform thickness for flexure and shear	1
				7.14.Numericals	1
				7.15. Numericals	1
			7.16. Numericals	1	
			7.17.Numericals	1	

		S		7.18.Class test	1
		S			