Discipline: **Civil Engg.**	Semester : **4TH**	Name of the Teaching Faculty: **SHARMISTHA DAS (GUEST LECTURER)**
Subject: SD I	No. of days/per week class allotted: **05**	Semester From date : 16/01/2024 To Date: 26/04/2024 No. of Weeks: 15
Week	**Class Day**	**Theory**
1ST	1st	Objectives of design and detailing & different methods of design of concrete structure
	2nd	Introduction to reinforced concrete, grades of concrete and steel, advantages of reinforced cement concrete, concept of under reinforced, balanced & over reinforced section
	3rd	Assumptions in working stress method, derivation of formula for balanced design
	4th	Problem discussion on finding out the design constants and analysis of the section using WSM
	5th	Problem discussion on design of the section using WSM
2ND	1st	UNIT 1 DISCUSION
	2nd	Definition, advantages of LSM over WSM, Limit state of collapse & serviceability, Characteristic strength of material.
	3rd	Characteristic load, partial safety factor, design load, loading on structure, I.S specification regarding spacing of reinforcement in slab
	4th	IS specification regarding cover to reinforcement and minimum reinforcement in slab, beam & column, concept of lapping, anchorage, effective span for beam and slab.
	5rd	UNIT 2 DISCUSSION
3RD	1st	Assumptions, idealised stress - strain curve for steel and concrete
	2nd	Design stress block parameter, derivation of formula for singly reinforced rectangular beam
	3rd	Finding out M.R, limiting M.R, percentage of steel and limiting percentage of steel
	4th	Problem discussion on finding out the design constant & type of the beam
	5th	Problem discussion on analysis of singly reinforced section
4TH	1st	Problem discussion on analysis of singly reinforced section
	2nd	Problem discussion on design of singly reinforced beam
	3rd	Problem discussion on design of singly reinforced beam
	4th	Necessity of providing doubly reinforced beam, Stress & strain diagram of doubly reinforced beam
	5th	finding out depth of N.A and moment of resistance of doubly reinforced beam.
	1st	Finding out the area of tensile & compression reinforcement, problem discussion on analysis of doubly reinforced beam

5TH	2nd	Problem discussion on analysis of doubly reinforced beam
	3rd	Problem discussion on analysis of doubly reinforced beam
	4th	Problem discussion on design of doubly reinforced beam
	5th	Problem discussion on design of doubly reinforced beam
6TH	1st	UNIT 3 DISCUSSION
	2nd	Nominal shear stress, design shear strength of concrete, maximum shear stress, criteria of minimum shear reinforcement and different forms of shear reinforcement
	3rd	Concept of bond, types of bond, bond stress, development length for tension and compression, anchorage values for hook and bend
	4th	Problem discussion on design of shear reinforcement in beam
	5th	Problem discussion on checking of development length criteria in beams.
7TH	1st	UNIT 4 DISCUUSION
	2nd	**CLASS TEST**
	3rd	General features, advantages, effective width of flange as per IS 456-2000
	4th	Finding out position of neutral axis, Analysis of singly reinforced T – beam, stress-strain diagram
	5th	Deriving formula of moment of resistance of a T- beam section with N.A lies within the flange.
8TH	1st	Problem discussion on finding moment of resistance of a T- beam section with N.A lies within the flange.
	2nd	Design of a T – beam section
	3rd	Derivation of formula for T – beam section when the N.A lies in the web
	4th	UNIT 5 DISCUSSION
	5th	**CLASS TEST QUESTION DISCUSSION & DISTRIBUTION OF EVALUATED ANSWER SHEET TO THE STUDENT FOR THEIR REFERENCES**
9TH	1st	Concept of one way and two way spanning slab, reinforcement requirement, shear stress, spacing of reinforcement, cover and development length criteria for slab
	2nd	Design of simply supported one way slab with design of flexure
	3rd	Design of slab with check for shear and development length.
	4th	Design of slab with check for deflection and detailing of the slab.
	5th	Design of cantilever slab with check for flexure, check for shear, development length, deflection and detailing of the slab
10TH	1st	Design of cantilever chajjas with check for flexure, check for shear, development length, deflection and detailing of the slab
	2nd	Design of two way simply supported slab- moment and shear force calculation
	3rd	Design of two way slab with corners free to lift – design of flexure
	4th	Design of two way slab with provision of check for shear and development length

	5th	Design of two way slab with check for deflection and detailing of the slab
11TH	1st	Types of staircase, structural classification of staircase, Loads and their effect on stair slab
	2nd	Design of stair slab spanning longitudinally – design of main bar, distribution bar and detailing of the staircase
	3rd	Design of stair slab spanning longitudinally – design of main bar, distribution bar and detailing of the staircase
	4th	UNIT 6 DISCUSSION
	5th	Assumptions in limit state of collapse, definition and classification of column,
12TH	1st	Effective length of column, specification for longitudinal & transverse reinforcement.
	2nd	Minimum eccentricity and ultimate load carrying capacity of column
	3rd	Design of a short axially loaded square column and detailing
	4th	Design of a short axially loaded square column and detailing
	5th	Design of a short axially loaded rectangular column and detailing
13TH	1st	Design of a short axially loaded rectangular column and detailing
	2nd	Design of a short axially loaded circular column and detailing
	3rd	Design of a short axially loaded circular column and detailing
	4th	Definition, Types of foundation , Bearing capacity of soil & depth of foundation, determination of area of footing from load and bearing capacity of soil
	5th	Analysis of foundation – critical section for bending moment
	3rd	Analysis of foundation – critical section for shear force, transfer of load at base of column
	4th	Design of isolated square footing for column – design of flexure
	5th	Design of isolated square footing for column – shear one way action and two way action
14TH	1st	**CLASS TEST**
	2nd	**DOUBT CLEARING**
	3rd	**CLASS TEST QUESTION DISCUSSION & DISTRIBUTION OF EVALUATED ANSWER SHEET TO THE STUDENT FOR THEIR REFERENCES**
	4th	**OMR TEST**
	5th	DISCUSSION OF ASSIGNMEN
15TH	1st	CLASS TEST
	2nd	PREVIOUS SEMESTER QUESTIONS DISCUSSION
	3rd	**PREVIOUS SEMESTER QUESTION PAPER DISCUSSION**

	4th	**PREVIOUS SEMESTER QUESTION PAPER DISCUSSION**
	5th	**PREVIOUS SEMESTER QUESTION PAPER DISCUSSION**