

Lesson Planning (Theory)

Branch : Civil Engineering

Semester : 5th

Subject : Design Of RCC Structure

Session : August-December 2026

Teacher: Er. Anuj Rana

Class Room : A-201

S.No.	No. of WEEKS	Chapter/ Unit Description	Detail of Contents	Reference Resources	Remarks
1	3 WEEKS	UNIT-I Introduction to R.C.C Designing using Limit State Method	- Design Philosophies: Working Stress Theory, Ultimate Design Theory, Limit State Theory - Concept of Reinforced Cement Concrete (RCC) Reinforcement Materials: - Suitability of Steel as reinforcing material - Properties of mild steel and HYSD steel - Loading on structure as per I.S 875. - Study of BIS:456-2000-clause5, clause6, clause9, Clause18, clause19, clause22, clause 23.0, 23.2, 23.3, Clause25, clause26, clause35, clause36, clause37, clause 38, clause 39, clause 40, clause 41, clause42, clause 43, Annexure–B, C, D, E, G	R1,R2	
2	3 WEEKS	UNIT-II Shear, Bond, and Development Length (LSM) UNIT-III Analysis and Design of Singly Reinforced Sections	- 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 with numerical problems. - Bond and types of bonds, Bond Stress, check for bond stress, Development length in tension and compression, anchorage value for hooks 90° bend and 45° bend. Standard Lapping of bars, check for development length. - Determination of development length required for tension reinforcement of cantilevers beam and slab, check for development length. - Limit State of collapse (Flexure), Assumption stress. Strain relationship for concrete and steel, neutral axis, Stress block diagram and Strain diagram for singly reinforced section.	R1,R2	
3	3 WEEKS	UNIT-III Analysis and Design of Singly Reinforced Sections	- Concept of under- reinforced, over-reinforced and balanced section, neutral axis, limiting value of moment of resistance and limiting percentage of steel required for balanced singly R.CSection. - Simple numerical problems on determining design constants, moment of resistance and area of steel. - Design of Singly reinforced simply supported beam and	R1,R2	

		UNIT-IV Analysis and Design of Doubly Reinforced Sections (LSM)	cantilever beam. • General features, necessity of providing doubly reinforced reinforcement, limitations. • Analysis of doubly reinforced section, strain diagram, stress diagram, depth of neutral axis, moment of resistance of the section. • Numerical problems on finding moment of resistance		
4	3 WEEKS	UNIT-V Design of One-Way Slab (LSM) UNIT-VI Two Way Slab (LSM)	• Analysis & Design of simply supported one-way slab. • Design of two-way simply supported slab with corners free & no provision for torsion reinforcement.	R1,R2	
5	2 WEEKS	UNIT-VII Design of Axially Loaded Column (LSM)	• Assumptions in limit state of collapse–compression • 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. (No numerical on helical ties). • Analysis and Design of axially loaded: Uniaxial & Biaxial Bending along with axial loading: short, square, rectangular, and circular columns with lateral ties only; check for short column and check for minimum eccentricity may be applied.	R1,R2	

REFERENCE RESOURCES

- Shah, V. L., and Karve, S.R., Limit State Theory and Design of Reinforced Concrete Structures, Structures Publications, Pune.
- Krishna Raju, and N. Pranesh, R.N., Reinforced Concrete Design Principles and Practice, New

Signature of Teacher

Signature of H.O.D/OIC

