



CIVIL ENGINEERING

SEMESTER : 5th

FROM :01/07/2026 TO :05/11/2026

NAME OF THE FACULTY : Er. RADHASHYAM JENA

SUBJECT : DESIGN OF RCC STRUCTURE

TOTAL CLASS AVAILABLE IN SEMESTER: 45 nos

NO. OF PERIODS : 03/ WEEK

Class No.	Unit	Topic / Sub-topic	Teaching Method	Learning Outcome
1	I	Introduction to RCC Design, Working Stress Method vs Limit State Method, Design Philosophies	Lecture	Understand RCC design philosophy
2	I	Limit State Method – Assumptions, Material Properties & Design Parameters	Lecture	Explain LSM concepts
3	I	Design of Singly Reinforced Beam – Basic Concepts	Lecture + Numerical	Understand beam design procedure
4	I	Design of Singly Reinforced Beam – Numerical Problems	Numerical Practice	Design singly reinforced beams
5	I	Design of Doubly Reinforced Beam	Lecture + Numerical	Design doubly reinforced beams
6	I	Shear in RCC – Nominal Shear Stress & Design Shear Strength	Lecture	Explain shear behavior
7	I	Design of Shear Reinforcement, Minimum Shear Reinforcement & IS 456 Provisions	Lecture + Numerical	Design shear reinforcement
8	I	Bond Stress, Types of Bond & Check for Bond Stress	Lecture	Explain bond requirements
9	I	Development Length, Anchorage Value, Hooks & Lapping of Bars	Lecture + Numerical	Calculate development length
10	I	Serviceability Limit State – Introduction, Revision & Numerical Practice	Lecture + Practice	Understand serviceability checks
11	I	Unit Test & Problem Solving Session	Test	Assess Unit-I
12	II	Introduction to RCC Columns, Classification & Effective Length	Lecture	Classify RCC columns
13	II	Limit State of Compression Members, IS 456 Provisions	Lecture	Explain codal provisions



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14	II	Reinforcement Details – Minimum Steel, Cover, Ties & Spacing	Lecture	Apply reinforcement requirements
15	II	Design of Axially Loaded Square Column	Lecture + Numerical	Design square columns
16	II	Design of Rectangular Column	Numerical Practice	Design rectangular columns
17	II	Design of Circular Column	Numerical Practice	Design circular columns
18	II	Revision & Unit Test	Practice/Test	Assess Unit-II
19	III	Introduction to Flanged Beams (T & L Beams), Advantages	Lecture	Explain flanged beams
20	III	Effective Width of Flange as per IS 456	Lecture + Numerical	Determine effective flange width
21	III	Stress-Strain Diagram & Neutral Axis in T-Beams	Lecture	Explain stress distribution
22	III	Design of Singly Reinforced T-Beam	Lecture + Numerical	Design T-beams
23	III	Numerical Problems on Neutral Axis & Effective Width	Numerical Practice	Solve flanged beam problems
24	III	Revision & Unit Test	Practice/Test	Assess Unit-III
25	IV	Introduction to Slabs – One-Way and Two-Way Slabs	Lecture	Classify slab systems
26	IV	Design of One-Way Simply Supported Slab	Lecture + Numerical	Design one-way slabs
27	IV	Checks for Shear, Deflection & Development Length	Lecture + Numerical	Perform slab safety checks
28	IV	Design of Cantilever Slab & Chajjas	Numerical Practice	Design cantilever slabs
29	IV	Design of Two-Way Simply Supported Slab	Lecture + Numerical	Design two-way slabs
30	IV	Reinforcement Detailing in Slabs	Lecture	Prepare reinforcement details
31	IV	Introduction to Dog-Legged Staircase Design	Lecture	Explain staircase design concepts
32	IV	Staircase Design Concepts & Reinforcement	Lecture + Numerical	Understand stair design basics
33	IV	Comprehensive Numerical Practice	Practice	Strengthen slab design skills



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34	IV	Revision & Unit Test	Practice/Test	Assess Unit-IV
35	V	Introduction to Footings, Types & Minimum Eccentricity	Lecture	Explain footing concepts
36	V	Design of Isolated Footing for Axially Loaded Column	Lecture + Numerical	Design isolated footings
37	V	Design for One-Way Shear & Two-Way Shear	Numerical Practice	Perform shear checks
38	V	Design for Bending & Reinforcement Detailing	Lecture + Numerical	Design footing reinforcement
39	V	Footing Design for Column with Uniaxial Moment	Lecture + Numerical	Design eccentric footings
40	V	IS 456 Provisions for Footing Design	Lecture	Apply codal provisions
41	V	Comprehensive Footing Design Problem	Numerical Practice	Integrate footing design concepts
42	V	Revision of Beam, Column, Slab & Footing Design	Practice	Strengthen complete RCC design
43	V	Model Numerical Test	Test	Assess problem-solving ability
44	V	Doubt Clearing & Complete Course Revision	Discussion	Reinforce all units
45	V	Final Internal Assessment & Course Wrap-up	Test/Discussion	Complete course assessment

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27.06.26
Sign of Faculty

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27.06.26
Sign of HOD
Kantapada, Niall, Cuttack

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