

BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF CIVIL ENGINEERING



LESSON PLAN

SUBJECT: DESIGN OF RCC STRUCTURES (TH 2)

ACCADEMIC SESSION: 2026-27

FACULTY: MS. MALABIKA PATRA, SR. LECT

SEMESTER: 5TH

SEC : A&B

Sd/-

H O D (Civil Engg.)

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COURSE OUTCOMES

- CO1:** Apply Limit State Method principles to design RCC beams subjected to flexure and shear.
- CO2:** Evaluate bond, anchorage, development length, and serviceability requirements in reinforced concrete members.
- CO3:** Design and detail axially loaded RCC columns in accordance with IS 456:2000.
- CO4:** Design RCC slabs, chajjas, and staircases considering strength and serviceability requirements.
- CO5:** Design RCC isolated footings subjected to axial load and uniaxial bending using codal provisions.

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Discipline: Civil Engineering	Semester: 5th A&B	Name of the teaching faculty: Mrs Malabika Patra, Sr. Lect
Subject: Design Of RCC Structure	No. of Days/ per week class allotted: 03 periods per week.	Semester From Date: 01-07-2026 To Date: 05-11-2026 No. of weeks: 19 weeks
Week	Class Day	Theory Topics
1 st	1st	UNIT I - Design Philosophies, Shear, Bond and Development length in Design of RCC member Design Philosophies
	2nd	IS 456-2000 recommendation for designing structures using LSM
	3rd	Design of Singly Reinforced beam for flexure using LSM
2 nd	1st	Design of Singly Reinforced beam for flexure using LSM
	2nd	Numerical problem on Singly Reinforced beam
	3rd	Numerical problem on Singly Reinforced beam
3 rd	1st	Doubly Reinforced beam for Flexure using LSM
	2nd	Doubly Reinforced beam for Flexure using LSM
	3rd	Numerical problem on Doubly Reinforced beam
4 th	1st	Numerical problem on Doubly Reinforced beam
	2nd	Nominal shear stress in RCC section, Design shear strength of concrete
	3rd	Minimum Shear Reinforcement, Provisions of IS 456 2000, forms of shear reinforcement

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5 th	1st	Design Steps for Shear Reinforcement
	2nd	Numerical problem on design of shear reinforcement
	3rd	Numerical problem on design of shear reinforcement
6 th	1st	Types of bond, Bond stress, check for bond stress
	2nd	Determination of Development length in tension and compression members and check as per codal provisions, Anchorage value of 90 degree hook, Lapping of bars
	3rd	Introduction to serviceability limit state check
7 th	1st	Unit II Design of axially loaded RCC Column Definition and classification of column
	2nd	Limit state of compression members, Effective length of column
	3rd	The codal recommendations of Is 456:2000 for the design of Columns
8 th	1st	Provisions of IS 456 2000 for minimum steel, cover, maximum steel, spacing of ties etc
	2nd	Design of axially loaded short column - Square
	3rd	Design of axially loaded short column - Square
9 th	1st	Design of axially loaded short column - Rectangular
	2nd	Design of axially loaded short column - Rectangular
	3rd	Design of axially loaded short column - Circular
10 th	1st	Design of axially loaded short column - Circular

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	2nd	Unit III Design of RC flanged beam General features of T and L beams, Advantages, Effective width as per BIS 456 2000
	3rd	Class Test – I
11 th	1st	Design of singly reinforcement T beam, Stress and Strain diagram,
	2nd	Depth of neutral axis, Moment of resistance, T and L beams with neutral axis in flange only.
	3rd	Internal Assessment – I
12 th	1st	Simple numerical on location of neutral axis, Effective width of flange
	2nd	Simple numerical on location of neutral axis, Effective width of flange
	3rd	Unit IV Design of slab Design of simply supported one-way slab for flexure, shear and deflection and checks, as per the provisions of BIS 456
13 th	1st	Design of simply supported one-way slab for flexure, shear and deflection and checks, as per the provisions of BIS 456
	2nd	Design of one-way cantilever slab, Chajjas, Flexure including checks for Development length and Shear stress
	3rd	Design of one-way cantilever slab, Chajjas, Flexure including checks for Development length and Shear stress
14 th	1st	Design of one-way cantilever slab, Chajjas, Flexure including checks for Development length and Shear stress
	2nd	Design of two-way simply supported slab

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	3rd	Design of two-way simply supported slab
15 th	1st	Introduction to design of dog-legged staircase
	2nd	Design of dog-legged staircase
	3rd	Class Test – II
16 th	1st	Design of dog-legged staircase
	2nd	Design of footing for axially loaded column only
	3rd	Numerical problem on axially loaded column
17 th	1st	Numerical problem on axially loaded column
	2nd	Minimum Eccentricity, Design of Footing for uni-axial bending, column with uni- axial moment as per IS 456 provisions
	3rd	Design of Footing for uni-axial bending, column with uni- axial moment as per IS 456 provisions
18 th	1st	Design of Footing for uni-axial bending, column with uni- axial moment as per IS 456 provisions
	2nd	Internal Assessment – II
	3rd	Important Numerical Problems and Probable Questions Discussion.
19 th	1st	Important Numerical Problems and Probable Questions Discussion.
	2nd	Important Numerical Problems and Probable Questions Discussion.
	3rd	Important Numerical Problems and Probable Questions Discussion.