

LESSON PLAN OF 5th SEMESTER CIVIL ENGINEERING(2026-27)

Discipline :-CIVIL	Semester:-5 th	Name of the Teaching Faculty: ASHUTOSH BAISHAKH
Subject:- Pavement design & maintenance(TH3)	No of Days/per Week Class Allotted :-03	Semester From:- <u>1st JULY 2026</u> To:- <u>5th NOVEMBER 2026</u> No of Weeks:- 15
Week	Class Day	Theory/ Practical Topics
1 st	1 st	1.0 Basics of pavement Design • Types of pavement - Flexible, Rigid and Semi Rigid
	2 nd	• Types of pavement - Flexible, Rigid and Semi Rigid
	3 rd	• Comparison of Rigid and flexible pavement according to Design precision, life maintenance, initial cost, stages of construction, availability of materials, surface characteristic, penetration of water in the pavement, utility location, glare and night visibility.
2 nd	1 st	• Comparison of Rigid and flexible pavement according to Design precision, life maintenance, initial cost, stages of construction, availability of materials, surface characteristic, penetration of water in the pavement, utility location, glare and night visibility.
	2 nd	• Comparison of Rigid and flexible pavement according to Design precision, life maintenance, initial cost, stages of construction, availability of materials, surface characteristic, penetration of water in the pavement, utility location, glare and night visibility.
	3 rd	• Functions and characteristics of pavement.
3 rd	1 st	• Functions and characteristics of pavement.
	2 nd	• Revision, Factors affecting selection of type of pavement.
	3 rd	2.0 Fundamentals of pavement design • Factors affecting pavement design-design wheel load, Traffic factors
4 th	1 st	• Factors affecting pavement design-design wheel load, Traffic factors
	2 nd	• Environmental factors
	3 rd	• Road geometry and material,
5 th	1 st	• Road geometry and material,
	2 nd	• Characteristics of soil and Drainage situation
	3 rd	• Revision, Characteristics of soil and Drainage situation
6 th	1 st	3.0 Design of Flexible and Concrete pavement • Overview, Methods of flexible pavement design-Theoretical method
	2 nd	• Overview, Methods of flexible pavement design-Theoretical method
	3 rd	• Empirical method with and without soil strength test
7 th	1 st	• IRC37 guidelines for design of flexible pavement (overview only)
	2 nd	• IRC37 guidelines for design of flexible pavement (overview only)
	3 rd	• Factors affecting design of concrete pavement.
8 th	1 st	• IRC58 guidelines for design of concrete pavement (overview only)

	2 nd	•IRC58 guidelines for design of concrete pavement (overview only)
	3 rd	•Joints-Need, Types, requirements, spacing of joints
9 th	1 st	• Revision, Joints-Need, Types, requirements, spacing of joints
	2 nd	4.0 Pavement evaluation • Definition and purpose of pavement evaluation
10 th	3 rd	• Definition and purpose of pavement evaluation
	1 st	•Methods of Pavement evaluation Visual rating
	2 nd	•Methods of Pavement evaluation Visual rating
11 th	3 rd	•Pavement serviceability index
	1 st	•Pavement serviceability index
	2 nd	•Pavement serviceability index, Roughness
12 th	3 rd	•Roughness, measurements
	1 st	•Benkelman Beam deflection method
	2 nd	• Revision, Benkelman Beam deflection method
13 th	3 rd	5.0 Pavement Maintenance • Types of pavement maintenance - routine, periodic, and special.
	1 st	• Types of pavement maintenance - routine, periodic, and special.
	2 nd	• Need for inspection and maintenance schedule.
14 th	3 rd	• Causes of pavement failure and remedial measures. Typical flexible and rigid pavement failures.
	1 st	Types and causes of damages in flexible pavement, surface defects, cracks. Deformations Rutting, fatigue, settlement and upheaval.
	2 nd	Types and causes of damages in flexible pavement, surface defects, cracks. Deformations Rutting, fatigue, settlement and upheaval.
15 th	3 rd	Disintegration- loss of aggregate, stripping, pothole. Remedial measures - slurry seal, liquid seal, fog seal, and patching, ready mix patch.
	1 st	Types of damages to rigid pavement - cracking, spalling, slab rocking,
	2 nd	• settlement, joint sealant failure. Methods of repair - repair of spalled joints, full depth reconstruction, and replacement of dowel bars.
	3 rd	• Revision, settlement, joint sealant failure. Methods of repair - repair of spalled joints, full depth reconstruction, and replacement of dowel bars.

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03/08/26

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LESSON PLAN OF 5th SEMESTER CIVIL ENGINEERING(2026-27)

Discipline :-CIVIL	Semester:-5 th	Name of the Teaching Faculty: ASHUTOSH BAISHAKH
Subject:- Design of RCC Structure(TH2)	No of Days/per Week Class Allotted :-03	Semester From:- 1st JULY 2026 To:- 5th NOVEMBER 2026 No of Weeks:- 15
Week	Class Day	Theory/ Practical Topics
1 st	1 st	Unit-1 Design Philosophies, Shear, Bond and Development length in Design of RCC member Design Philosophies, Design of Singly Reinforced & Doubly Reinforced beam for Flexure using LSM.
	2 nd	Design Philosophies, Design of Singly Reinforced & Doubly Reinforced beam for Flexure using LSM.
	3 rd	Design Philosophies, Design of Singly Reinforced & Doubly Reinforced beam for Flexure using LSM.
2 nd	1 st	Nominal shear stress in RCC section, Design shear strength of concrete, Design of shear reinforcement
	2 nd	Nominal shear stress in RCC section, Design shear strength of concrete, Design of shear reinforcement
	3 rd	Minimum Shear Reinforcement, Provisions of IS 456 2000, forms of shear reinforcement
3 rd	1 st	Types of bond, Bond stress, check for bond stress
	2 nd	Determination of Development length in tension and compression members and check as per codal provisions, Anchorage value of 90o hook, Lapping of bars.
	3 rd	Determination of Development length in tension and compression members and check as per codal provisions, Anchorage value of 90o hook, Lapping of bars.
4 th	1 st	Simple numerical on: Shear reinforcement, Adequacy of section for shear.
	2 nd	Introduction to serviceability limit state check
	3 rd	UNIT-2 Design of axially loaded RCC Column Definition and classification of column, Limit state of compression members, Effective length of column.
5 th	1 st	Definition and classification of column, Limit state of compression members, Effective length of column.
	2 nd	Provisions of IS 456 2000 for minimum steel, cover, maximum steel, spacing of ties etc.
	3 rd	Provisions of IS 456 2000 for minimum steel, cover, maximum steel, spacing of ties etc.
6 th	1 st	Design of axially loaded short column - Square, Rectangular, and Circular only.
	2 nd	Design of axially loaded short column - Square, Rectangular, and Circular only.
	3 rd	Design of axially loaded short column - Square, Rectangular, and Circular only.
7 th	1 st	Design of axially loaded short column - Square, Rectangular, and Circular only.

	2 nd	UNIT-3 Design of RC flanged beam General features of T and L beams, Advantages, Effective width as per BIS 456 2000
	3 rd	General features of T and L beams, Advantages, Effective width as per BIS 456 2000
8 th	1 st	Design of singly reinforcement T beam, Stress and Strain diagram, Depth of neutral axis, Moment of resistance, T and L beams with neutral axis in flange only.
	2 nd	Design of singly reinforcement T beam, Stress and Strain diagram, Depth of neutral axis, Moment of resistance, T and L beams with neutral axis in flange only.
	3 rd	Simple numerical on location of neutral axis, Effective width of flange.
9 th	1 st	Simple numerical on location of neutral axis, Effective width of flange.
	2 nd	UNIT-4 Design of slab Design of simply supported one-way slab for flexure, shear and deflection and checks, as per the provisions of BIS 456
	3 rd	Design of simply supported one-way slab for flexure, shear and deflection and checks, as per the provisions of BIS 456
10 th	1 st	Design of simply supported one-way slab for flexure, shear and deflection and checks, as per the provisions of BIS 456
	2 nd	Design of one-way cantilever slab, Chajjas, Flexure including checks for Development length and Shear stress.
	3 rd	Design of one-way cantilever slab, Chajjas, Flexure including checks for Development length and Shear stress.
11 th	1 st	Design of one-way cantilever slab, Chajjas, Flexure including checks for Development length and Shear stress.
	2 nd	Design of two-way simply supported slab
	3 rd	Design of two-way simply supported slab
12 th	1 st	Design of two-way simply supported slab
	2 nd	Introduction to design of dog-legged staircases
	3 rd	Introduction to design of dog-legged staircases
13 th	1 st	UNIT -5 Design of Footing Design of footing for axially loaded column only.
	2 nd	Design of footing for axially loaded column only.
	3 rd	Design of footing for axially loaded column only.
14 th	1 st	Design of footing for axially loaded column only.
	2 nd	Minimum Eccentricity, Design of Footing for uni-axial bending,
	3 rd	Minimum Eccentricity, Design of Footing for uni-axial bending,
15 th	1 st	Minimum Eccentricity, Design of Footing for uni-axial bending,
	2 nd	column with uni- axial moment as per IS 456 provisions.
	3 rd	column with uni- axial moment as per IS 456 provisions.

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