

Detailed Teaching Plan

Topics to be covered

Unit-1.0 Introduction to Concrete

Lecture No.	Unit No	Planned Date	Execution Date
1	1	4/2/25	4/2/25
2			
3			
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10			

1.1 Introduction

1.1.1 Concrete and its ingredients and their functions

1.1.2 Various mixes and grade.

1.1.3 Various types of concrete and their uses

1.1.4 Advantages and disadvantages of concrete.

1.2 Ingredients of concrete

(A) Water: Requirements of quality of water in concrete as per IS:456-2000 and its function.

(B) Cement

1.3.1 Function of cement in concrete

1.3.2 Ingredients of ordinary Portland cement and their function

1.3.3 Bougué's compounds and its functions

1.3.4 test on cement: fineness, standard consistency, initial & final setting times, compressive strength & soundness

1.3.4 Different types and Grades of cement as per IS Codes

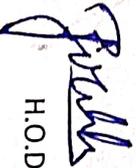
1.4 Aggregates

1.4.1 Classification: According to size, shape, texture and source.

1.4.2 Characteristics of aggregates: Particle size and shape, surface texture, specific gravity of aggregate; bulk density, water absorption,

surface moisture, bulking of sand, deleterious materials soundness

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1.4.3 Grading of aggregates: coarse aggregate, fine aggregate; All-in-aggregate, Fineness modulus, interpretation of grading chart.

Unit-2 Fresh concrete

11		24/3/25	25/3/25
12	2.1 Fresh concrete and its properties - water cement ratio, Workability, hardness, Segregation and bleeding	28/3/25	27/3/25
13		31/3/25	27/2/25
14	2.1.1 Factors affecting workability	31/3/25	28/3/25
15	2.1.2 Methods of measurement of workability Slump Test	7/3/25	
16	Compaction Factor Test	7/3/25	7/3/25
17	Vee Bee consistometer, flow table test	7/3/25	
18	2.1.3 Recommended slumps for placement in various conditions as per IS:456-2000/SP-23	11/3/25	
19	2.1.4 Relation between workability and strength of concrete	11/3/25	4/3/25
20	2.2 Batching of materials, Methods of mixing of concrete - Hand & Machine Mixing, mixing time.	18/3/25	4/3/25
21	Transportation and placing of concrete.	18/3/25	
22	2.3 Ready mixed concrete, proportioning ready mixed concrete, production of ready mixed concrete	21/3/25	
23	2.4 Methods of compaction of concrete and its suitability Factors affecting compaction	21/3/25	8/3/25
24	2.5 Finishing of concrete	25/3/25	
25	2.6 Curing and its importance, its methods and suitability Effect of curing on development of strength of concrete	25/3/25	8/3/25
26	2.7 Admixtures and its benefits	25/3/25	

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27		Types of Admixtures - Accelerator and Retarder Plasticizer and super plasticizer and air entering admixture.	11/04/25	2	11/3/25
28			14/12/25		
Unit-3 Hardened Concrete					
29	3	3.1 Hardened Concrete and its Properties	4/4/25	2	28/3/25
30		3.2 Compressive Strength, Tensile Strength, Bond Strength, Flexure Strength Durability, impermeability	4/4/25		
31		3.3 Factors affecting Compressive Strength	8/4/25	2	14/12/25
32		3.4 IS Test Procedure to find Compressive Tensile Strength of Concrete, Acceptance Criteria, Mean Strength & Standard Deviation	8/4/25		
33		3.5 Durability of Concrete & factors affecting it	11/4/25	2	4/4/25
34		3.6 Economy of Concrete & factors affecting it	11/4/25		
36		3.7 Methods of Non-Destructive Test of Concrete Rebound Hammer Test, Ultrasonic, Pulse Velocity Test	15/4/25	2	8/4/25
37		3.9 Introduction to Special concrete: Light weight concrete, Mass concrete, Fiber reinforced concrete, Polymer concrete, High density concrete, No fines concrete, ferro cement, shotcrete.	15/4/25		
Unit-4 Concrete Mix design					
38	4	4.1 Factors causing variation in quality of concrete,	22/4/25	2	
		4.2 Field Control, Advantages of Quality control.	22/04/25	2	22/4/25
		4.3 Statistical Quality control.	22/04/25		
		4.4.1 Concrete Mix Design and its importance.	25/04/25	2	
		4.4.2 Nominal Mix and Design Mix.	25/04/25	2	
		4.4.3 Factors affecting concrete mix design.	25/04/25	2	24/4/25-3
39		4.4.4 Different methods of Mix Design and its suitability.	25/04/25	2	25/4/25

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40	4.5 I.S. method to design a Concrete Mix As per IS 10262-2009.4.6 Example of Mix design as per I.S. method	29/4/25	29/4/25
	4.7 safety precautions observed	29/4/25	29/4/25
Unit-5 Defects and Repair of concrete			
41	5.1 Deterioration of concrete, Types of deteriorations and its effects,	2/05/25	30/4/25
	5.2 Prevention of concrete deterioration		
42	Corrosion of reinforcement		
	Effect of corrosion of reinforcement in concrete and remedial measures.		
43	5.3 Types, causes and remedies of concrete cracks before hardening and after hardening	2/05/25	3/5/25
	5.4 Evaluation of cracks, methods of evaluation of cracks	6/05/25	5/5/25
44	5.5 Prevention of cracks, Materials for repair of cracks, Methods used for repair of cracked Concrete	6/05/25	6/5/25
45	5.6 Repair and strengthening of column, repair of concrete floor slab system, overlays and surface treatments, underwater repairs.	6/05/25	78/5/25
46		9/05/25	18/5/25
47	5.7 Strengthening of damaged structures, section enlargement,	9/05/25	8/5/25
48	Strengthening of beams & slab	9/05/25	9/5/25
		10/5/25	
		12/5/25	

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