

Lesson Plan

Name of the Faculty : Manju Bala
Discipline : Civil Engg.
Semester : 4th
Subject : Concrete Technology
Lesson Plan Duration : 15 weeks (from January, 2020 to April, 2020)

Week	Theory		Practical	
	Lecture day	Topic (Including assignment / test)	Practical Day	Topic
1st	1st	Chapter 1. Introduction Definition of concrete uses of concrete in comparison to other building material	1st	To determine the physical properties of cement as per IS Codes
	2nd	Chapter 2. Ingredients of Concrete Cement: physical properties of cement; different types of cement as per IS Codes Aggregates		
	3rd	Classification of aggregates according to size and shape Characteristics of aggregates: Particle size and shape, surface texture, specific gravity of aggregate		
2nd	4th	Bulk density, water absorption, surface moisture, bulking of sand deleterious materials soundness	2nd	To determine flakiness and elongation index of coarse aggregates
	5th	Grading of aggregates: coarse aggregate, fine aggregate; All-in-aggregate; fineness modulus; interpretation of grading charts		
	6th	Water: Quality requirements as per IS:456-2000		
3rd	7th	Chapter3.Water Cement Ratio Hydration of cement, principle of water-cement ratio	3rd	To determine silt in fine aggregate
	8th	Duff Abram's Water-cement ratio law: Limitations of water-cement ratio law		
	9th	Limitations of water-cement ratio law and its effects on strength of concrete		
4th	10th	Chapter4.Workability Workability factors affecting workability, Measurement of workability	4th	Determination of specific gravity and water absorption of aggregates

	11th	slump test, compacting factor and Vee Bee consistometer; Recommended slumps for placement in various conditions as per IS:456-2000/SP-23		
	12th	Revision and Assignment No.1 1 Workability factors affecting workability 2 slump test, compacting factor and Vee Bee consistometer		
5th	13th	Sessional Test No.1	5th	Determination of bulk density and voids of aggregates
	14th	Chapter5. Properties of Concrete Properties in plastic state		
	15th	Workability, Segregation, Bleeding and Harshness		
6th	16th	Properties in hardened state: Strength, Durability, Impermeability, Dimensional changes	6th	To determine surface moisture in fine aggregate by displacement method
	17th	Chapter 6. Proportioning for Normal Concrete Objectives of mix design		
	18th	introduction to various grades as per IS:456 2000; proportioning for nominal mix design as prescribed by IS 456-2000		
7th	19th	Adjustment on site for: Bulking of fine aggregate, water absorption of aggregate, workability	7th	Determination of particle size distribution of fine, coarse and all in aggregate by sieve analysis (grading of aggregate)
	20th	Difference between nominal and controlled concrete Introduction to IS-10262-2009-Code for controlled mix design		
	21st	Chapter7. Introduction to Admixtures Admixtures (chemicals and minerals)		
8th	22nd	Admixtures (chemicals and minerals) for improving performance of concrete	8th	To determine necessary adjustment for bulking of fine aggregate
	23rd	Revision Assignment No.2 1 Workability, Segregation, Bleeding and Harshness 2 Bulking of fine aggregate, water absorption of aggregate		
	24th	Sessional Test No.2		
9th	25th	Chapter8. Special Concretes (only features) Concreting under special conditions	9th	To determine workability by slump test

	26th	difficulties and precautions before, during and after concreting, Cold weather concreting		
	27th	Ready mix concrete, Fibre reinforced concrete, Polymer Concrete, Silica fume concrete, Fly ash concrete		
10th	28th	Chapter9. Concreting Operations Storing of Cement, Storing of cement in a warehouse	10th	To verify the effect of water, fine aggregate/coarse aggregate ratio and aggregate/Cement ratio on slump
	29th	Storing of cement at site, Storing of cement in a warehouse, Effect of storage on strength of cement		
	30th	Storing of Aggregate: Storing of aggregate at site, Batching (to be shown during site visit)		
11th	31st	Batching of Cement, Batching of aggregate by: Volume, using gauge box (farma) selection of proper gauge box	11th	Compaction factor test for workability
	32nd	Weight spring balances and batching machines		
	33rd	Measurement of water, Mixing, Hand mixing		
12th	34th	Machine mixing - types of mixers, capacities of mixers, choosing appropriate size of mixers, operation of mixers	12th	Non destructive test on concrete by rebound hammer
	35th	Maintenance and care of machines, Transportation of concrete: Transportation of concrete using: wheel barrows, transit mixers, chutes, belt conveyors, pumps, tower crane and hoists etc		
	36th	Placement of concrete, Checking of form work, shuttering and precautions to be taken during placement		
13th	37th	Compaction, Hand compaction, Machine compaction - types of vibrators, internal screed vibrators, and form vibrators	13th	Non destructive test on concrete by ultrasonic pulse velocity test
	38th	Selection of suitable vibrators for different situations		
	39th	Finishing concrete slabs - screeding, floating and trowelling, Curing		
14th	40th	Objectives of curing, methods of curing like ponding, membrane curing, steam curing, chemical curing, Duration for curing and removal of form work	14th	Tests for compressive strength of concrete cubes for different grades of concret

	41st	Objectives of curing, methods of curing like ponding, membrane curing, steam curing, chemical curing, Duration for curing and removal of form work		
	42nd	Jointing: Location of construction joints, treatment of construction joints, expansion joints in buildings - their importance and location		
15th	43rd	Chapter10;Importance and methods of non-destructive tests (introduction only) non-destructive tests	15th	Revision
	44th	Revision Assignment No.3 1 Curing, Objectives of curing 2. Cold weather concreting, Compaction: 3. Fibre reinforced concrete, Fly ash concrete, Mixing:		
	45th	Sessional Test No.3		