LESSON PLAN

Name of Faculty : GAURAV **Discipline : Civil Engineering**
Subject : CT **Semester : 3rd (Lectures =2)**
Lesson plan Duration : AUG-NOV

Week	Lecture Day	THEORY TOPIC (including Assignments / Seeminar / Group Discussion / Sessional Tests)	Delivery Date of Lecture	
			Expected	Actual
1st	1st	**UNIT I 1. Introduction to Concrete**		
	2nd	1.1 Definition of concrete, properties of concrete. Advantages and disadvantages of concrete.		
2nd	3rd	**2. Ingredients of Concrete** 2.1 Cement: Introduction only		
	4th	2.2 Aggregates: 2.2.1 Classification of aggregates according to size and shape		
3rd	5th	2.2.2 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		
	6th	2.2.3 Grading of aggregates: coarse aggregate, fine aggregate; All-in- aggregate; fineness modulus; interpretation of grading charts		
4th	7th	2.3 Water: Water Quality requirements as per IS:456-2000		
	8th	UNIT II 3. Water Cement Ratio		
5th	9th	3.1 Hydration of cement principle of water-cement ratio, Duff Abram's Water-cement ratio law: Limitations of water-cement ratio law and its effects on strength of concrete		
	10th	**Assignment – 1 / Group discussion / Technical Quiz / Seminar**		
6th	11th	**Sessional Test - 1**		
	12th	**4. Properties of Concrete** 4.1 Properties in plastic state: Workability, Segregation, Bleeding and Harshness 4.1.1 Factors affecting workability, Measurement of workability: slump test, compacting factor; Recommended slumps for placement in various conditions as per IS:456-2000/SP-23		
7th	13th	4.2 Properties in hardened state: Strength, Durability, Impermeability, Dimensional changes.		
	14th	4.3 Concrete mix design (Introduction only) 4.4 Introduction to Admixtures (chemicals and minerals) for improving performance of concrete		
	15th	**UNIT III 5. Concreting Operations**		

8th	16th	5.1 Storing of Cement: 5.1.1 Storing of cement in a warehouse 5.1.2 Storing of cement at site 5.1.3 Effect of storage on strength of cement 5.1.4 Determination of warehouse capacity for storage of Cement		
9th	17th	**5.2 Storing of Aggregate: Storing of aggregate at site		
	18th	**5.3 Batching (to be shown during site visit 5.3.1 Batching of Cement 5.3.2 Batching of aggregate by: □ Volume, using gauge box (farma) selection of proper gauge box □ Weight spring balances and batching machines		
10th	19th	5.3.3 Measurement of water		
	20th	**5.4 Mixing: 5.4.1 Hand mixing 5.4.2 Machine mixing - types of mixers, capacities of mixers, choosing appropriate size of mixers, operation of mixers. 5.4.3 Maintenance and care of mixers		
11th	21st	**Assignment – 2 / Group discussion / Technical Quiz / Seminar**		
	22nd	**Sessional Test – 2**		
12th	23rd	**UNIT IV** **6.1 Transportation of concrete: Transportation of concrete using: wheel barrows, transit mixers, chutes, belt conveyors, pumps, tower crane and hoists etc. **6.2 Placement of concrete: Checking of form work, shuttering and precautions to be taken during placement		
	24th	6.3 Compaction: 6.3.1 Hand compaction 6.3.2 Machine compaction - types of vibrators, internal screed vibrators and form vibrators 6.3.3 Selection of suitable vibrators for different situations 6.4 Finishing concrete slabs - screeding, floating and trowelling		
13th	25th	6.5 Curing: 6.5.1 Objective of curing, methods of curing like ponding, membrane curing, steam curing, chemical curing 6.5.2 Duration for curing and removal of form work 6.6 Jointing: Location of construction joints, treatment of construction joints, expansion joints in buildings - their importance and location 6.7 Defects in concrete: Identification of defects and methods of removing defects.		
	26th	**UNIT V 7. Special Concretes (only features)**		

14th	27th	7.1 Concreting under special conditions, difficulties, and precautions before, during and after concreting 7.1.1 Cold weather concreting 7.1.2 Under water concreting 7.1.3 Hot weather concreting		
	28th	7.2 Ready mix concrete 7.3 Fly ash concrete		
15th	29th	**8. Importance and methods of non-destructive tests (introduction only)** 8.1. Rebound Hammer Test 8.2. Pulse Velocity method **Assignment – 3 / Group discussion / Technical Quiz / Seminar**		
	30th	**Sessional Test-3**		