

Name of the Faculty
Discipline
Semester
Subject
Lesson Plan Duration
Week
1st
2nd
3rd
4th
5th
6th
7th
8th
9th
10th
11th
12th

13th

14th

15th

Prashant Jogi
Civil Engineering
3rd
Concrete Technology
15 weeks (02 lectures per week)
Theory Topics
Definition of concrete, properties of concrete. Advantages and disadvantages of concrete.
Cement: Introduction
Classification of aggregates according to size and shape
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
Grading of aggregates: coarse aggregate, fine aggregate; All-in- aggregate; fineness modulus; interpretation of grading charts
Water: Water Quality requirements as per IS:456-2000
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
1st Sessional Test
Properties in plastic state: Workability, Segregation, Bleeding and Harshness ; Factors affecting workability
Measurement of workability: slump test, compacting factor; Recommended slumps for placement in various conditions as per IS:456-2000/SP-23
Properties in hardened state: Strength, Durability, Impermeability, Dimensional changes
Concrete mix design (Introduction only); Introduction to Admixtures (chemicals and minerals) for improving performance of concrete
Storing of cement in a warehouse; Storing of cement at site; Effect of storage on strength of cement
Determination of warehouse capacity for storage of Cement & Storing of Aggregate: Storing of aggregate at site
Batching of Cement; Batching of aggregate by Volume, using gauge box (farma) selection of proper gauge box, Weight spring balances and batching machines & Measurement of water
Hand mixing ; Machine mixing - types of mixers, capacities of mixers, choosing appropriate size of mixers, operation of mixers. & Maintenance and care of mixers
2nd Sessional Test
Transportation of concrete: Transportation of concrete using: wheel barrows, transit mixers, chutes, belt conveyors, pumps, tower crane and hoists etc. ; Placement of concrete: Checking of form work, shuttering and precautions to be taken during placement
Compaction: Hand compaction & Machine compaction - types of vibrators, internal screed vibrators and form vibrators ; Selection of suitable vibrators for different situations.
Finishing concrete slabs - screeding, floating and trowelling ;Curing: Objective of curing, methods of curing like ponding, membrane curing, steam curing, chemical curing & Duration for curing and removal of form work
Jointing: Location of construction joints, treatment of construction joints, expansion joints in buildings - their importance and location ; Defects in concrete: Identification of defects and methods of removing defects.

Concreting under special conditions, difficulties, and precautions before, during and after concreting ; Cold weather concreting ; Under water concreting ; Hot weather concreting ; Ready mix concrete & Fly ash concrete

Importance and methods of non-destructive tests (introduction only): Rebound Hammer Test & Pulse Velocity method

3rd Sessional Test

Weak Student Classes/Doubt Clearing Classes

Discussion and Compilation

