

**Course Objective:**

*To have knowledge on building materials like fine aggregate, coarse aggregate, cement, their mechanical properties and their applications.*

1. a) Determination of Specific Gravity of Cement.  
b) Determination of Unit Weight or Bulk Density of Cement.
2. Determination of Normal Consistency of Cement.
3. a) Determination of Initial Setting Time of Cement.  
b) Determination of Final Setting Time of Cement.
4. a) Preparation of Mortar Cubes for Compressive Strength.  
b) Test on Mortar Cubes for Compressive Strength.
5. a) Fineness of Cement by sieving method.  
b) Fineness of Cement by Air Permeability Method.
6. a) Determination of Specific Gravity of Fine Aggregate.  
b) Determination of Bulk Density of Fine Aggregate.

**Fine Aggregate**

7. a) Determination of Specific Gravity of Coarse Aggregate.  
b) Determination of Bulk Density of Coarse Aggregate.
8. Tests on Bulking of Sand a. Laboratory Method b. Field Method.
9. Determination of Fineness Modulus of Fine Aggregate.
10. Determination of Fineness Modulus of Coarse Aggregate.

**Tests on Concrete**

1. Tests on Workability of Concrete.
  - a. Slump Test
  - b. Compaction Factor Test
2. Tests on Hardened Concrete.
  - a. Compressive Strength
  - b. Flexural Strength
  - c. Split tensile strength.
3. Non-Destructive Testing of Concrete Structures (only demonstration).

**Course Outcomes:**

- Students can test and analyze the properties of concrete materials.
- Students can design different proportions of concrete mixes.
- Students can have knowledge on non-destructive techniques on concrete.

**NOTE:** At least EIGHT of the above experiments are to be conducted.

**List of Equipment :**

1. Pycnometers.
2. Slump cone
3. Vicat's apparatus
4. Specific gravity bottle.
5. Lechatlier's apparatus.
6. Compaction factor setups
7. Longitudinal compressometer and
8. Rebound hammer, Pulse velocity machine.
9. Relevant IS Codes

*Green*

