



## **BUILDING MATERIALS LAB**

### **Courses Covered:**

1. CET-122-L-Concrete Technology
2. CET-123-L-Materials and Methods of Construction
3. CET-312-L-Reinforced and Prestressed Concrete

**DEPARTMENT OF CIVIL ENGINEERING  
TECHNOLOGY  
PUNJAB TIANJIN UNIVERSITY OF TECHNOLOGY,  
LAHORE**

## **Course Title: CET-122-L-Concrete Technology**

### **List of Experiments:**

1. Aggregate (course and fine) gradations and its impact on strength of concrete.
2. Determination of specific gravity and bulk densities of aggregates.
3. Casting specimens for varying w/c ratio and bulk densities, slump test and casting standard cubes and cylinders.
4. Effect of w/c ratio on strength of concrete (compressive strength test on cubes and cylinders).
5. Preparing test specimens from hand mixed, machine mixed and hand compacted concrete and comparison of compression tests on specimens.
6. Determination of initial and final setting time for Portland cement.
7. Comparison of cube and cylinder strength.
8. Casting of reinforced concrete beam specimens and testing specimen for observation of flexural and shear cracks.
9. Slump for different workability concrete.
10. Modulus of rupture test on beam specimens.
11. Schmidt/rebound hammer test, to evaluate the surface hardness of concrete.
12. Ultrasonic pulse velocity test for checking the quality and uniformity of concrete.
13. Cover meter test to measure the distance of steel reinforcing bars beneath the surface of the concrete and to measure the diameter of the reinforcing bars.

## **Course Title: CET-123-L-Materials and Methods of Construction**

### **List of Experiments:**

1. Standard consistency test of cement.
2. Fineness of Cement.
3. Standard sizes of brick and blocks.
4. Determination of water absorption of a brick and stone.
5. Determination of efflorescence of brick.
6. Determination of compressive strength of brick/block.
7. Determination of moisture content of wood.
8. Determination of specific gravity of wood.
9. Fineness modulus of various sands.
10. Abrasion test of coarse aggregate.
11. Crushing strength of coarse aggregates.
12. Field visit to observe formwork, scaffolding and reinforcement erection of a building construction project.
13. Field visit/video observation to observe concreting of a building.

## **Course Title: CET-312-L-Reinforced and Prestressed Concrete**

### **List of Experiments:**

1. To study the compressive strength of concrete using cube and cylinder.
2. To study effect of aggregate/cement ratio of workability and compressive strength of concrete.
3. To determine the strength of concrete using core extraction and to discuss the results from control cylindrical samples.
4. To study the permeability of concrete samples with various mix ratio.
5. Making form work for precast concrete members and grills and casting of the specimens.
6. Study of equipment and machinery for pre-stressed concrete industry.
7. Casting and testing specimens of pre-stressed concrete units.
8. Casting and testing of specimens of precast RC concrete units.
9. Test for evaluation of structures (visual inspection and rebound hammer).

### **List of Equipment's:**

1. Universal Testing Machine (Quantity = 01).
2. Cement Mixer (Quantity = 04).
3. VICAT Apparatus (Quantity = 02).
4. Cement Mortar squeezing Table/Vibrating Machine (Quantity = 03).
5. Concrete Mixer (Quantity = 02).
6. Apparatus for Concrete Slump Test (Quantity = 04).
7. Concrete Vibrating Table (Quantity = 01).
8. Constant Temperature and Humidity Standard Curing Box/Cement Curing Table (Quantity = 02).
9. Electronic Balance (Quantity = 04).
10. Standard Sieve (Quantity = 06).
11. Sieve Shaker (Quantity = 02).
12. Electric Thermostatic Drying Oven (Quantity = 02).
13. Electric thermostatic Water bath (Quantity = 02).
14. Compaction Factor Apparatus (Quantity = 02).
15. Testing Molds of Cement Mortar, Concrete, Asphalt (Quantity = 20).
16. Cylinder Capping Equipment (Quantity = 01).
17. Blaine's Air Permeability Apparatus (Quantity = 02).
18. Concrete Test Hammer (Quantity = 02).
19. Ultrasonic Pulse Velocity Tester (Quantity = 01).



**VICAT Apparatus**



**Cement Mixer**



**Concrete Mixer**



**Concrete Vibrating Table**



**Testing Molds of Cement Mortar, Concrete, Asphalt**



**Compaction Factor Apparatus**



**Concrete Slump Test**



**Sieve Shaker**



**Electronic Balance**



**Drying Oven**



**Cement Mortar Squeezing Table**



**Cylinder Capping Equipment**



**Electric Thermostatic Water bath**



**Blaine's Air Permeability Apparatus**



**Concrete Test Hammer**



**Ultrasonic Pulse Velocity Tester**



**Constant Temperature and Humidity Standard Curing Box/Cement Curing Table**



**Universal Testing Machine**