

CE/BOS/CE C203/0210

**K L UNIVERSITY**  
**CONCRETE TECHNOLOGY (CE C 203)**

L	T	P	Cr
3	0	2	4

**SYLLABUS**

**UNIT-1 Cement:** General; Cement and lime; Chemical composition of ordinary Portland cement; Functions of cement ingredients; Hydration of cement; Structure of Hydrated cement; Water requirements for hydration; Types of cement and its properties; Field tests for cement; Chemical composition test; Laboratory tests for cement; Grades of cement as per IS specifications.

**Aggregates:** Classification; Source; Grading of Aggregates; IS: 383 requirements for aggregates; Tests on aggregates; Alkali - Aggregate reaction.

**UNIT – 2 Water:** General; Quality of water; Use of sea water; IS: 456 requirements.

**Mortar:** Functions of sand in mortar; Classification of mortars; Properties of good mortar mix and mortar; Preparation of mortar; Uses of mortar; Precautions in using mortar; Selection of mortar; Tests for mortars.

**Cement Concrete:** Definition; Properties of cement concrete; Proportioning of concrete; Water/cement ratio.

**Admixtures in Concrete:** General; Air-entraining agents; Plasticizers; Pozzolanic admixtures; Accelerators; Retardars; Miscellaneous admixtures such as damp proofers and Surface hardeners.

**Fresh Concrete:** Workability of concrete; Measurement of workability; Segregation; Bleeding; Yield of Concrete.

**UNIT -3 Manufacture of Concrete:** Batching of concrete; Mixing; Transporting Concrete; Placing concrete; Compaction of concrete; Curing of concrete; Finishing.

**Tests on Hardened Concrete:** Compression test; Moulds and compacting; Curing; Failure of compression specimen; Effect of height / diameter ratio on strength; Flexural strength of concrete; Tensile strength of concrete; Non - destructive testing methods; Tests on composition of hardened concrete; Elastic properties of concrete; Relation between modulus of Elasticity and strength; Factors affecting modulus of elasticity; Creep; Factors affecting creep; Shrinkage; Plastic shrinkage; Mechanism of shrinkage; Factors affecting shrinkage.

**UNIT – 4 Durability of Concrete:** Permeability of concrete; Sulphate attack; Methods of controlling sulphate attack; Durability of concrete in sea water; Action of foreign matter on concrete.

**Special Concrete & Concreting Methods:** Special concretes such as light weight concrete and no fines concrete; High density concrete; Polymer concrete and Fibre reinforced concrete; special concreting methods Cold weather concreting, Hot weather concreting; Guniting or shotcrete; Ferro cement.

**UNIT – 5 Concrete Mix Design:** Concept of mix design; Variables in proportioning; Nominal mix and design mix; Indian standard method of mix design; ACI Method

**TEXT BOOK:**

1. Concrete Technology by A.M. Neville, Pearson Edition.

**REFERENCE BOOKS:**

1. Concrete Technology by M.E. Grambhir, Tata Mc Graw- Hill Publishing Company Ltd.
2. Concrete technology by M.S Shetty, S. Chand & Company (Pvt) Ltd., New Delhi.

**LIST OF EXPERIMENTS**

1. To Determine the initial and final setting time of cement with vicat's apparatus
2. To Determine the Normal Consistency of cement with vicat's apparatus
3. To Determine the fineness modulus of fine aggregates
4. To Determine the fineness modulus of coarse aggregates
5. To find bulk density specific gravity void ratio and porosity of fine aggregates
6. To find bulk density specific gravity void ratio and porosity of Coarse aggregates
7. Workability of concrete by slump cone apparatus
8. Workability of concrete by Compaction factor apparatus
9. To find the compressive strength of concrete cubes and cylinders
10. To determine the tensile strength of concrete by split cylinder test
11. To determine the flexural strength of concrete beam specimen
12. To determine the flakiness index of the given aggregate
13. To determine the elongation index of the given aggregate