CONCRETE TECHNOLOGY
Code: CE503
Contact: 3L
Credits: 3

Module 1
Concrete as a Structural Material, Chemical Composition of Cement, Hydration of Cement, Heat of Hydration and Strength, Tests on Cement and Cement Paste – fineness, consistency, setting time, soundness, strength [6]

Module 2
Types of Portland Cement – ordinary, Rapid hardening, low-heat, sulphate resisting, Portland slag, Portland pozzolana, super sulphated cement, white cement [4]

Module 3
Aggregates – Classification, Mechanical and Physical Properties, Deleterious Substances, Alkali- Aggregate Reaction, Sieve Analysis, Grading Curves, Fineness modules, Grading Requirements. Testing of Aggregates – Flakiness, Elongation Tests, Aggregate Crushing Value, Ten Percent Fines Value, Impact Value, Abrasion Value [6]

Module 4
Quality of Water – Mixing Water, Curing Water, Harmful Contents [2]

Module 5
Properties of Fresh Concrete – Workability, Factors Affecting Workability, Slump Test Compacting Factor Test, Flow Table Test, Segregation, Bleeding, Setting Time, Mixing and Vibration of Concrete, Mixers and Vibrators, Curing methods, Maturity. [6]

Module 6
Strength of Concrete – Water/Cement ratio, Gel/Space ratio, Strength in Tension, Compression, Effect of Age on Strength, Relation between Compressive and Tensile Strength, Fatigue Strength, Stress Strain Relation and Modulus of Elasticity, Poisson's Ratio, Shrinkage and Creep, Compression Test on Cubes, Cylinders, Non-Destructive Tests [6]

Module 7
Admixtures –different types, effects, uses, Retarders and Super plasticizers.
Mix Design by I.S. Code method.
Light-weight, Polymer and Fibre-reinforced concrete [6]

References
1. Concrete Technology Neville Pearson Education
2. Concrete Technology M.S. Shetty S.Chand
3. Concrete Technology A. R. Santakumar OXFORD University Press
4. Concrete Technology M.L. Gambhir Tata McGraw Hill
5. Text book of Concrete Technology P.D. Kulkarni Tata McGraw Hill