

Year & Sem: E1S2	Course Code: CE1204	Course Name: Building Materials and Concrete Technology	No. of Credits: 4	L 2	T&PS 2	P 0
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UNIT-I: Introduction To Construction Materials:

Classification of materials, Properties of materials-Physical, Mechanical, Thermal, Physiochemical, Material selection. Manufacture, properties, classification and specifications, brick masonry and principles of design of masonry structures, Other materials- Timber, Stones, Geotextile, FRPs, Epoxy-coated bar.

UNIT-II: Concrete-Cement and Admixtures:

Constituents of concrete, Cement - Required raw materials, manufacturing of cement, hydration of cement, physical properties of cement (Fineness, setting time, soundness, compressive strength, heat of hydration, specific gravity), chemical composition and properties of cement, various types of cement, Functions of admixtures, classification of admixtures.

UNIT-III: Aggregates and Water:

Classification according to size, classification according to shape, characteristics of aggregates (strength of aggregate, particle shape and texture, specific gravity, bulk density, bulking of fine aggregate), Thermal properties, Sieve analysis, Fineness modulus, Grading curves, Grading of fine and coarse aggregates, Gap graded aggregates, maximum size of aggregate, Alkali-aggregate reaction, Quality of mixing water.

UNIT-IV: Production of Concrete:

Batching of materials, mixing of concrete materials, transportation of concrete, placing of concrete, compaction of concrete, curing of concrete, form work.

UNIT-V: Properties of Fresh and Hardened Concrete:

Workability, measurement of workability, factors affecting workability, requirements of workability, Segregation and Bleeding. Strengths of concrete, stress and strain characteristics of concrete, Factors affecting strength, Maturity concept, Elasticity, shrinkage, creep and durability of concrete, efflorescence, fire resistance, thermal properties of concrete.

UNIT-VI: Mix Design: Factors in the choice of mix proportions, Concrete mix design by various methods - IS method, DoE method and ACI method

References/Text Books:

1. Properties of Concrete by A.M.Neville – Pearson publication – 4th edition
2. Concrete Technology by M.S. Shetty. – S.Chand & Co.- 2004
3. Concrete Technology by M.L. Gambhir. – Tata Mc. GrawHill Publishers, New Delhi
4. Building materials by Rangwala

Lecture Plan: Unit-I & -II syllabus for MID-I, Unit-III & -IV syllabus for MID-II and Unit-V & -VI syllabus for MID-III examinations.

Video Lectures (Web Links):

1. <http://nptel.ac.in/courses/105102088/>