

BUILDING MATERIALS AND CONSTRUCTION

Course Code: 13CE1105

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Course Educational Objectives:

- ❖ To create a strong understanding on the importance of various building materials used in civil engineering construction projects.
- ❖ To impart knowledge on characteristics, properties of various building components and materials.

Course Outcomes:

- ❖ Student should demonstrate the ability to select an appropriate building materials used in construction.
- ❖ Student should demonstrate the ability to apply different construction techniques in buildings.

UNIT-I

(15 Lectures)

BRICKS & STONES:

Properties of building stones – Relation to their structural requirements. Classification of stones – Stone quarrying – Precautions in blasting, Dressing of stone, Composition of good brick earth, Qualities of a good brick, Various methods of manufacture of bricks. Comparison between clamp burning and kiln burning, Other types of bricks.

FERROUS AND NON-FERROUS METALS:

Ferrous metals, Desirable characteristics of reinforcing steel. Principles of cold working. Detailed discussion on reinforcing steel, Mechanical and Physical properties Chemical composition. Aluminum- Brief description on properties and uses.

UNIT-II

(8 Lectures)

TIMBER:

Timber Structure – Properties – Seasoning of timber, Classification of various types of timbers used in buildings – Defects in timber, Preservation of timber, fire resistance of timber and testing of timber.

UNIT-III**(15 Lectures)****MASONRY:**

Brick masonry – Bonding of bricks, Method of laying of bricks, Inspection of brick work, Construction of half brick masonry wall, height of walls in brick masonry and brick piers. Stone masonry – Classification of stone masonry – Random Rubble, Coursed Rubble and Ashlar masonry.

UNIT-IV**(12 Lectures)****BUILDING COMPONENTS:**

Lintels, Arches and Vaults - Staircases – Types. Different types of flooring- Concrete, Mosaic, Terrazo floors; Different types of roofs- Pitched, Flat and Curved Roofs. Lean-to-Roof, Coupled Roofs, Trussed roofs- King and Queen Post Trusses. Doors & Windows – Types, Sizes and Rate.

UNIT-V**10 Lectures)****OTHER CONSTRUCTION TECHNIQUES:**

Damp Proofing and Water Proofing- materials used- Specifications of Dam Proof Course in walls, Basic principles of water proofing of basements, Plastering, Pointing, White washing, Distempering and Painting. Form work and Scaffolding.

TEXT BOOKS:

1. S K Duggal, “*Building materials*”, 2nd Edition, New Age International Publishers, 2010.
2. B.C.Punmia, Ashok Kumar Jain and Arun Kumar Jain, “*Building Construction*” - Laxmi Publications (P) Ltd., New Delhi.
3. P.C. Varghese, “*Building Construction*”, Prentice-Hall of India private Ltd, New Delhi

REFERENCES:

1. R.Chudly “*Construction Technology*”, (Volumes I and II), 2nd Edition, Longman, UK, 1987.
2. P.C. Varghese “*Building materials*” by Prentice-Hall of India private Ltd, New Delhi
3. P.C. Varghese, “*Building Construction*”, Prentice-Hall of India private Ltd, New Delhi

