

## BUILDING MATERIALS AND CONSTRUCTION

**Course Code: 15CE1103**

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### Course Outcomes:

At the end of the course the student will be able to:

- CO 1** Distinguish various types of bricks & stones used in construction and their requirement.
- CO 2** Determine the principal properties of wood and its classification.
- CO 3** Associate with construction of brick & stone masonry
- CO 4** Explain different components & systems of buildings
- CO 5** Infer the concept of water proofing, damp proofing materials and construction techniques

### UNIT-I

**(14 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 including Hollow concrete blocks.

#### 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. Non-Ferrous Metals: 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****(8 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****(10 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 PRACTICES:**

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

**TEXT BOOKS:**

1. S. K. Duggal, “*Building Materials*”, 2nd Edition, New Age International Publishers, 2010.
2. S.C. Rangwala, *Engineering Materials*, Charotar Publications, New Delhi, 2<sup>nd</sup> Edition.

3. B.C. Punmia, Ashok Kumar Jain and Arun Kumar Jain, “*Building Construction*” - Laxmi Publications (P) Ltd., New Delhi.
4. P.C. Varghese, “*Building Construction*”, Prentice-Hall of India Private Ltd, 3<sup>rd</sup> Edition, New Delhi.

#### REFERENCES:

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