

CE-404B**BUILDING MATERIALS & CONSTRUCTION
(OPEN ELECTIVE)****L T P C
4 - - 3****COURSE OBJECTIVES:**

1. To teach the basics involved in selection of good quality building materials for construction
2. To give knowledge about various building elements and their specifications
3. Presents the basics of planning strategies, building bye laws and acoustics of building
4. preparing tender notice and various approvals needed for a project
5. Valuation of building and rent fixation

COURSE OUTCOMES:**After successful completion of the course, the students are able to**

1. familiar with various building materials
2. know about various building elements and their specifications
3. familiar with types of masonry works and bonds used in construction
4. understand building plan and have knowledge about building rules, bye-laws and building elements
5. know about Valuation of building and rent fixation.

UNIT I*Text Book - 1 (12)***Clay bricks** : Brick clay, Preparation of bricks, Types of bricks, Dimensions of bricks, Weight of bricks, Storing of bricks, Brick substitutes, Classification of bricks, Tests for bricks.**Timber** : Classification of trees, Structure of wood, seasoning and con-version of timber, Market forms of timber, Defects of timber, Treatment of timber, Classification of timber.**Glass** : Manufacture and Classification, Treatment of glass, Uses of glass, testing for quality, Characteristics and Performance of glass, Glass fibre.**Plastics** : Classification of plastics, Properties of plastics, Fabrication of plastic articles, some plastics in common use, Reinforced plastics.**UNIT II***Text Book - 2 (12)***Cement** : General, Manufacture of Portland cement by dry process, Approximate oxide composition limits of OPC, Bogue's compounds, Hydration of cement, heat of hydration, structure of hydrated cement.**Types of Cements** : Ordinary Portland cement, low alkali cement, Rapid hardening cement, Sulphate resisting cement, Portland blast furnace slag cement, Portland pozzolana cement, air entraining cement, white cement, hydro phobic cement, oil well cement, low heat Portland cement.**UNIT III***Text Book - 1 (12)***Building Rules and Bye-Laws** : Zoning regulations, Regulations regarding layouts or sub-divisions, Building regulations, Rules for special type of buildings, Calculation of plinth, floor and carpet area, Floor space index.**Building Elements** : Conventional signs, Guidelines for staircase planning, Guidelines for selecting doors and windows, Terms used in the construction of door and window, Specifications for the drawing of door and window.**UNIT IV***Text Book - 3 (12)***Analysis of Rates** : Task or out - turn work, Labour and materials required for different works, Rates of materials and labour, Preparing analysis of rates for the following items of work: i) Concrete ii) RCC Works iii) Brick work in foundation and super structure iv) Plastering v) CC flooring vi) White washing.

PWD Accounts and Procedure of Works : Organization of Engineering department, Work charged establishment, Contract, Tender, Tender notice, Tender Schedule, Earnest money, Security money, Measurement book, Administrative approval, Technical sanction, Plinth area, Floor Area, Carpet area, Approximate Estimate, Plinth area estimate, Revised Estimate, Supplementary estimate.

UNIT V*Text Book - 1 (12)*

Valuation : Cost, Price & value, Methods of valuation, Out goings, Depreciation, Methods for Estimating cost depreciation, Valuation of building.

Miscellaneous Topics : Gross income, Net income, Scrap value, Salvage value, Obsolescence, Annuity, Capitalized value, Years purchase, Life of structures, Sinking fund, Standard rent, Process of fixing standard rent, Mortgage.

LEARNING RESOURCES:**TEXT BOOK(s):**

1. Estimating & Costing in Civil Engineering by B.N. Dutta; UBS Publishers & Distributors, 2010.
2. Building Materials by P.C. Vergese, 1st Edition, PHI, 2009.

REFERENCE BOOK(s):

1. Engineering Materials by Rangawala, Charotar Publications, Fortieth Edition: 2013
2. Building construction by BC Punmia et al., 10th Edition, Laxmi Publications, 2008.
3. Building planning, designing and scheduling by Gurucharan Singh, Standard book House, 2006.

WEB RESOURCES:

1. <http://nptel.iitm.ac.in/courses.php>
2. <http://freevideolectures.com/Course/86/Building-Materials-and-Construction>
3. <http://www.learnerstv.com/Free-Engineering-Video-lectures-ltv053-Page1.htm>
4. <http://bookmoving.com/register.php?ref=Building%20materials%20rangwala>