**20CEXXO2– BUILDING TECHNOLOGY**

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| **Course Category:** | Open Elective | **Credits:** | 3 |
| **Course Type:** | Theory | **Lecture - Tutorial - Practical:** | 3 - 0 - 0 |
| **Prerequisite:** | None | **Sessional Evaluation :**  **Univ. Exam Evaluation:**  **Total Marks:** | 40  60  100 |

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| **Course Outcomes** | CO1 | Identify the factors to be considered in planning and construction of buildings and Plan a building following the bye-law**s** |
| CO2 | Understand various types of stones and methods of manufacturing of bricks and tiles. |
| CO3 | Identify the importance of ingredients of lime, cement and concrete. |
| CO4 | Provide scope of smart construction materials alternative for cement and also be able to understand various types of masonry construction. |
| CO5 | Evaluate various building components and their various types. |
| CO6 | Understand the techniques and importance of damp proofing and finishing works of the building. |
| **Course**  **Content** | **UNIT – I**  **Fundamentals requirements of buildings:** Terms used in building drawing as per National Building Code (N.B.C) – Factors affecting in selection of site – Functional requirements of a residential building – Minimum size requirements as per N.B.C. – Standard sizes of Door – Windows and ventilators.  Basic building elements, Principles of planning. Relevant building by-laws (N.B.C) & Municipal, orientation of buildings – Provision of rainwater harvesting – provision for physically handicapped facilities.  **UNIT – II**  **Stones:** Properties of building stones – Relation to their structural requirements – Classification of stones.  **Bricks:** Composition of good brick earth, various types of bricks.  **Tile**: Characteristics of good tile and types of tiles.  **UNIT – III**  **Lime:** Various ingredients of lime –Constituents of lime stone – Classification of lime.  **Cement:** Portland cement – Chemical Composition – Hydration, setting and fineness of cement – Various types of cement and their properties – Various field and laboratory tests for Cement – Various ingredients of cement concrete and their importance – Various tests for concrete.  **UNIT – IV**  **Wood:**Introduction– Classification of timber (I.S.: 399) – Characteristics of good timber– Defects in timber – Types and Uses of Ply-wood and Engineered wood.–Uses of materialslike Aluminium, Gypsum, Glass and Bituminous materials.  **Masonry:** Types of masonry – English and Flemish bonds – Cavity, partition and shear walls.  **Smart Construction Materials:** Overview and use of Fly ash, Silica fume, Carbon fibers, Self-healing materials and Fiber reinforced plastics – Benefits of Nano-technology in construction industry.  **UNIT – V**  **Building Components:** Lintels – Arches – Vaults – Stair cases.  **Floors:** Different types of floors – Concrete – Mosaic and Terrazzo floors.  **Roofs:** Pitched roofs – Lean to roof – Coupled Roofs – Trussed roofs – King and Queen post Trusses – Flat roofs – R.C.C Roofs–Doors and windows.  **UNIT – VI**  **Building Finishes:** Damp Proofing and water proofing materials and uses. Plastering – Pointing – White washing and distempering.  **Paints:** Constituents of paint – Types of paints –Painting of new/old wood – Varnish. | |
| **Textbooks**  **and**  **References** | **TEXTBOOKS:**   1. S.C. Rangwala, *Engineering Materials*, Charotar publishing house, 43rd Edition, 2019. 2. B.C. Punmia, Arun K Jain, Ashok K Jain, *Building Construction*, Laxmi Publications, 11th Edition, 2016. 3. Dr. N. Kumara Swamy& A. KameswaraRao, *Building Planning and Drawing*, Charotar publishing house, 9th Edition, 2019.   **REFERENCE BOOKS:**   1. S.K. Duggal, *Building Materials*, New age international, 4th Edition, 2012. 2. Sushil Kumar, *Building Construction*, Standard Publisher, 19th Edition 2020. 3. S. Mahaboob Basha, *Building Materials, Construction and Planning*, , Anuradha Publications, 2011. | |

**CO-PO Mapping:**3-High Mapping, 2-Moderate Mapping, 1-Low Mapping, - -Not Mapping

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|  | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** | **PSO1** | **PSO2** | **PSO3** |
| **CO1** | 1 | - | 1 | 1 | - | 1 | 1 | - | - | - | 1 | 1 | - | - | - |
| **CO2** | 1 | 1 | 2 | 1 | 1 | - | - | - | - | - | - | 1 | - | - | - |
| **CO3** | 1 | 1 | 2 | - | 2 | - | - | - | - | - | - | 1 | - | - | - |
| **CO4** | 2 | - | 2 | - | 1 | 1 | 1 | - | - | - | 1 | 2 | - | - | - |
| **CO5** | 2 | - | 2 | - | 2 | 1 | - | - | - | - | 1 | 1 | - | - | - |
| **CO6** | 1 | 2 | 1 | - | 2 | 2 | - | 2 | - | 2 | - | - | 1 | 1 | 1 |