

1154CE104 (VTUR15)	<b>BUILDING MATERIALS</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
		<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

**COURSE CATEGORY:** Institute Elective

**A. PREAMBLE:**

To provide a general overview of basic construction related materials, properties, manufacturing / fabricating processes, and uses.

**B. PRE-REQUISITE:**

- Basic Civil Engineering

**C. COURSE EDUCATIONAL OBJECTIVE:**

Students undergoing this course are expected to:

Examine the properties of common construction materials and their behaviours under different environments, short or long-term.

Assess material properties, mechanical tests and quality control tests for wood and wood products, concrete, masonry, glass, plastics, iron and steel, Aluminium and their products, paints and protective coatings, gypsum products, resilient flooring, and carpeting.

Appraise appropriateness and sustainability of materials for construction projects.

**D. COURSE OUTCOMES:**

Upon the successful completion of the course, learners will be able to

<b>CO</b>	<b>STATEMENT</b>	<b>K LEVEL</b>
CO1	Classify the different types of stones and their properties for construction.	K2
CO2	Explain the constituents of bricks and various types of cements and properties	K2
CO3	Outline the ingredients, properties and types of concrete.	K2
CO4	Explain role of timber and aluminium as materials in constructions.	K2
CO5	Demonstrate the advancements in construction materials.	K2

**E. CORRELATION OF COs WITH POs:**

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						M						
CO2						M						
CO3						M						
CO4						M						
CO5					M		M					

**F. COURSE CONTENT**

**UNIT I STONES**

**9**

Classification - Selection – Use of stones in buildings - Requirement and testing of stones– Deterioration and preservation of stone work - Artificial stones.

**UNIT II BRICKS AND CEMENT**

**9**

Manufacture of bricks - Classification - Qualities - Tests on Brick - Uses of brick- Cement – Types of cement – Tests on cement – Application of cement.

**UNIT III CONCRETE**

**9**

Concrete – Ingredients – Manufacturing Process - Properties of fresh concrete - Properties of hardened concrete – Tests on fresh and hardened concrete – Application of concrete – RMC – Types of Concrete - Admixtures.

**UNITS IV TIMBER AND OTHER MATERIALS**

**9**

Timber – Market forms – Plywood – Veneer – Thermocol – Steel – Aluminium and Other Metallic Materials – Composition – Aluminium composite panel – Uses – Market forms – Paints – Varnishes.

**UNIT V MODERN MATERIALS**

**9**

Glass – Ceramics – Sealants for joints - Glass fibre reinforced polymers – Carbon Fibre reinforced polymers – Clay products – Composite materials – Types – Applications of laminar composites – Fibre textiles – Geo-membrane and Geo-textiles.

**TOTAL: 45 PERIODS**

## **G. LEARNING RESOURCES:**

### **a) TEXT BOOKS**

1. Rangwala, S.C., “Engineering Materials”, Charotar Publishing House, Anand, India , 43<sup>rd</sup> edition 2017.
2. Varghese.P.C, “ Builing Materials ” , PHI Learning Pvt. Ltd, New Delhi, 2<sup>nd</sup> edition, 2015.
3. Rajput. R.K.” Engineering Materials”, S. Chand and Company Ltd. New Delhi, 2008.

### **b) REFERENCES**

1. Jagadish.K.S, “Alternative Building Materials Technology”, New Age International Publishers, New Delhi, 2008.
2. Gambhir. M.L and NehaJamwal., “Building Materials”, products, properties and systems, Tata McGraw Hill Educations Pvt. Ltd, New Delhi, 2017.
3. Santhakumar A R “Concrete Technolgy “ Oxford University Press ” India, 2016
4. Shetty.M.S.” Concrete Technology” (Theory and Practice), S.Chand and Company Ltd., New Delhi, 8<sup>th</sup> edition, 2018.