

1151CE113 (VTUR15)	CONSTRUCTION MATERIALS AND TECHNIQUES	L	T	P	C
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Course Category: Programme Core

A. Preamble:

This course is useful for a detailed study of the construction materials and techniques applied in construction industry.

B. Prerequisites

- Nil

C. Link To Other Courses:

- Nil

D. Course Educational Objectives:

Students undergoing this course are expected

- To know the various conventional construction materials, properties and their uses
- To know the various latest and modern construction materials, properties and their uses
- To know and understand the general construction processes and their sequences
- To know and understand the various techniques which are useful for the substructure construction
- To know and understand the various techniques which are useful for the superstructure construction

E. Course Outcomes :

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

CO Nos.	Course Outcomes	Level of learning domain (Based on revised Bloom's)
CO1	Understand various conventional construction materials, properties and their uses	K2
CO2	Describe various latest and modern construction materials, properties and their uses	K2
CO3	Understand the general construction processes and their sequences	K3
CO4	Understand the various techniques which are useful for the substructure construction	K3
CO5	Understand the various techniques which are useful for the superstructure construction	K3

F. Correlation of COs with POs

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

G. Course content:**UNIT I CONVENTIONAL MATERIALS 9**

Stones - Classification - Selection - Requirement and testing of stones– Deterioration and preservation of stone work – clay-uses. Bricks –Manufacturing process - Classification - Qualities - Tests on Brick - Application of bricks. Cement – Types of cement – Tests on cement – Application of cement. Timber- cross section -classification – properties.

UNIT II MODERN MATERIALS 7

Plywood – Veneer – Thermacol – Steel--Paints –Varnishes - Glass – Ceramics – Plastics- Aluminium - manufacturing – types - uses. Fibre reinforced polymers. Geosynthetic material – types. Nano Materials.

UNIT III CONSTRUCTION PRACTICES 11

Specifications, details and sequence of activities and construction co-ordination – Site Clearance– Temporary shed – Marking – Earthwork-Termite Proof- Building foundations - Plinth beam- Basements - Damp proof courses - Masonry – Stone masonry –Brick masonry- Bond in masonry - Concrete block masonry – Load bearing walls- - Framed construction - Partition walls – Columns-Beams- Lintel and Sunshade- Doors and windows- Flooring – Centering and shuttering – Scaffoldings – de-shuttering forms– Roof and roof finishes - Weather and water proof course– Plastering – Pointing - Acoustic and fire protection.

UNIT IV SUBSTRUCTURE CONSTRUCTION 9

Box jacking – Pipe Jacking techniques. Under water construction diaphragm walls –cofferdam. Tunnelling techniques .Piling techniques. Well and caisson - sheet piles - shoring for deep cutting, Dewatering- well points.

UNIT V SUPERSTRUCTURE CONSTRUCTION 9

Launching girders, bridge decks, Offshore platforms – Special forms for shells - Techniques for heavy decks – In-situ pre-stressing in high rise structures, Material handling - Erecting light weight components on tall structures - Support structure for heavy Equipment and conveyors – Erection of articulated structures, braced domes and space decks

TOTAL: 45 Periods

H. Learning Resources

a) TEXT BOOKS

1. Arora S.P. and Bindra S.P., Building Construction, Planning Techniques and Method of Construction, Dhanpat Rai and Sons, 19th edition 2000.
2. Varghese , P.C. Building construction, Prentice Hall of India Pvt. Ltd, New Delhi,2007

b) REFERENCES

1. Gambhir, M.L, Concrete Technology, Tata McGraw – Hill Publishing Company Ltd, New Delhi, 2013
2. Sheety, M.S, Concrete Technology, Theory and Practice, S. Chand and Company Ltd, New Delhi, 2008
3. Jha J and Sinha S.K., Construction and Foundation Engineering, Khanna Publishers,2000.