15CE102	ELEMENTS OF BUILDING MATERIAL SCIENCE	L	T	P	C
	Total Contact Hours - 30	2	0	0	2
	Prerequisite				
	Nil				

PURPOSE	
To develop knowledge of conventional and new materials of construction.	
INSTRUCTIONAL OBJECTIVES	
1.	To learn the manufacturing process, types, applications and testing procedures for materials used for load bearing purpose
2.	To know about materials that is used for protection and functional purpose.
3.	To impart knowledge about basis of recent paradigms, and new materials

UNIT I- BASIC LOAD BEARING MATERIALS (6hours)

Conventional Materials: Stones: classification of rocks – quarrying – dressing – properties –uses of stones – tests for stones. Bricks: composition – manufacture – four operations – classification – qualities – uses – test for bricks. Timber: classification of trees – structure of tree – methods – wood product – uses.

UNIT II - ADVANCED LOAD BEARING MATERIALS (6hours)

Cement: Introduction – ingredients – manufacture – dry and wet process – types of cement – properties – uses – tests for cement. Mortar: functions – requirements – types – properties – uses – tests on mortar. Steel: introduction – types – properties – uses – market forms. Concrete: Ingredients – functions – w/c ratio – grades – admixtures – test on concrete – properties – uses. RCC: Characteristics – elements - advantages – disadvantages.

UNIT III- SPECIAL CONSTRUCTION MATERIALS (6hours)

Prestressed concrete – types – properties – uses – merits and demerits. Ferro cement – advantages – uses. Fibre reinforced concrete – types of fibres – steel fibres – SFRC – properties – applications. Lightweight concrete – types. High density concrete, High strength concrete – advantages – applications, High performance concrete – properties.

UNIT IV- NON LOAD BEARING MATERIALS (6hours)

Paints: Functions – constituents – characteristics – selection – types of paints – defects. Varnishes: Elements – properties – types. Distempers: composition – properties. Asbestos: Properties – uses – asbestos cements products. Glass: Constituents – composition – classification – properties – market form – uses. Plastic: constituents – classification – properties – uses.

UNIT V - RECENT CONSTRUCTION MATERIALS (6hours)

Reactive powder concrete – properties, Geopolymer concrete – advantages, Blended cement concrete – use of mineral admixtures – properties, Self health monitoring concrete, Bacterial concrete, Roller compacted concrete - uses, Self compacting concrete – properties – advantages, Ready mixed concrete – advantages.

TEXT BOOKS

1. Raju .K.V.B, Annadurai .R and PRavichandran.P.T, "*Construction Materials",* Ayyappaa Publications, Chennai, 2012.
2. Varghese.P.C, "*Building Materials"*, Prentice Hall India,2005.

REFERENCES

1. Rangwala .S.C, "*Engineering Materials"*, Charotor Publishing House, New Delhi, 2012.
2. Surendra Singh, "*Building Materials"*, Vikas Publishing Company, New Delhi, 1996.
3. Arora and Bindra .S.P, Building Construction, "*Planning Techniques and Method of Construction*", Dhanpat Rai Sons, New Delhi, 1988.
4. Gurucharan Singh, "*Building Construction and Materials"*, Standard Book House, Delhi, 1988.
5. Shetty .M.S, "*Concrete Technology"*, S.Chand and Company, New Delhi, 2010.
6. *"Lecture Notes on Special Concretes, Special Concrete*," Department of Civil Engineering, SRM Engineering College, Kattankulathur 2007.

15CE102 - ELEMENTS OF BUILDING MATERIAL SCIENCE												
Course designed by		Department of Civil Engineering										
1.	Student outcome	a	b	c	d	e	f	g	h	i	j	k
		x				x						x
2.	Mapping of instructional objectives with student outcome	1,2,3				1,2,3						2, 3
3.	Category	General (G)		Basic Sciences(B)		Engineering Sciences andTechnical Arts (E)				Professional Subjects (P)		
		--		--		--				X		
4.	Broad area	Structural Engineering		Geotechnical Engineering		Water Resources Engineering				Geomatics Engineering		
		X		--		--				--		
5.	Approval											