

KL UNIVERSITY
FIRST SEMESTER 2010-11
Course Handout
Academic Division

Dated: 07-07-2010

Course No. : CE C201
Course Title : Building Materials & Construction
Course Structure : 3-1-2
Course coordinator : S Kanakambara Rao

1. Course Description:

Building materials and construction is a fundamental subject for a construction engineer, which gives basic study of the stones, Bricks, Lime, timber, steel, paints, varnishes, distemper, insulating materials etc and also gives basics of stone and brick masonry construction along with the practices of damp proofing, roofing, flooring shoring, underpinning scaffolding, form work etc.

2. Scope and Objective of the Course:

make familiarize with the Building Materials used in various construction projects as well for other purposes in construction of Buildings.

The Materials like Stones, Bricks, Lime, Timber, Steel, Paints, Varnishes and Distempers, insulating materials. The course extensively discusses of the above materials in relation to Building construction.

The course deals with the acoustics of Buildings, Brick Masonry, and Stone Masonary.

The course will be taught with live examples so as to understand the importance of various building materials used in building construction.

The course further deals with construction techniques and methods in Damproofing, Roofing, flooring as well Scaffolding with examples.

3. Books:

(i) Textbook:

1. Building Materials by S. K Duggal New Age international publishers.
2. Building construction by P C Varghese, printice hall of India private limited, New Delhi

(ii) Reference Book:

1. Civil engineering materials by Parbin Singh printice hall of India private limited, New Delhi
2. Building construction by B. C Punmia, Laxmi Publications, New Delhi

4. Syllabus:

UNIT – 1

STONES: Classification of Stones; Qualities of a good building stone; Stone quarrying; Dressing of stones; Common building stones of India.

BRICKS: General; Composition of good brick earth; Harmful ingredients in brick earth; Manufacture of bricks; Comparison between clamp burning and kiln burning; Qualities of good bricks; Classification of bricks; Size and weight of bricks; Fire – clays.

UNIT-2

LIME: General; Some definitions; Sources of lime; Constituents of lime stones; Classification of limes; Comparison between fat lime and hydraulic lime; Manufacture of fat lime; Manufacture of natural hydraulic lime.

TIMBER: Definition; Structure of a tree; Defects in timber; Qualities of good timber; Preservation of timber; Seasoning of timber; Market forms of timber, Alternative materials for wood, galvanized iron, fiber reinforced plastics, steel and aluminum.

UNIT-3

STEEL: General; Manufacture of steel; Uses of steel; Defects in steel; Market forms of steel; Properties of mild steel; Properties of hard steel; Corrosion of ferrous metals.

PAINTS: Constituents of paints, types of paints, Painting of new and old substrate Painting; white washing, Varnishing; Distemping.

INSULATING MATERIALS: General, thermal insulators, electrical insulators and sound (acoustic) insulators

UNIT-4

BRICK MASONRY: Technical terms; Types of bonds in brickwork and their suitability.

STONE MASONRY: Technical terms; Classification of stone masonry.

UNIT – 5

DAMPNESS AND DAMP PROOFING: Introduction, Methods of preventing dampness; Damp proofing materials and their classification; Methods of providing DPC under different situations.

FLOORS: Technical terms; Different types of floors – concrete, mosaic, terrazzo, stone floors, ceramic tile floors , vinyl floors and wood floors.

ROOFS: Technical terms; Classification of roofs; Steel sloping roofs; Roof covering materials; Types of flat roofs.

SCAFFOLDING, SHORING, UNDER PINNING AND FORM WORK: Types of scaffolding; Types of shoring; Methods of underpinning; Types of formwork; Centering

5.Course Plan:

S.NO	LECTURE	Learning objective	TOPIC ON THE DAY	REMARKS
	UNIT-I			
STONES				
1	1	Introduction,classification & quality of stones	Classification of Stones, Qualities of a good building stone	T1, Ch-3
2	2	quarrying	Stone quarrying	
3	3	dressing	Dressing of stones	
4	4	Stones in India	Common building stones of India	
BRICKS				
5	5	Introduction, composition	General, Composition of good brick	T1, Ch-2

		& ingredients	earth, Harmful ingredients in brick earth	
6	6	Manufacture & Burning	Manufature of bricks,Comparison between clamp burying and kiln burying.	
7	7	Qualities ,classification, size & weight	Qualities of good bricks, Classification of bricks, Size and weight of bricks	
8	8	Fire-clays	Fire - Clays	
UNIT-II				
LIME				
9	9	Introduction	General; Some definition's	T1, Ch-8
10	10	Sources & constituents	Sources of lime,Constituents of lime stones.	
11	11	Classification and comparison	Classification of limes, Comparison between fat lime and hydraulic lime.	
12	12	manufacture	Manufacture of fat lime,Manufacture of natural hydraulic lime.	
	TIMBER			
13	13	Introduction	Definition; Structure of a tree;Defects in timber,Qualities of good timber,	T1, Ch-4
14	14	Preservation, seasoning &market forms	Preservation of timber, Seasoning of timber, Market forms of timber	
15	15	Galvanized iron	Alternative material for wood, Galvanized Iron	T1, Ch-20
16	16	FRP, steel & aluminium	Fibre Reinforced Plastics, steel, aluminum	
UNIT-III				
STEEL				
17	17	Introduction	General; Manufacture of steel; Uses of steel;	T1, Ch-13
18	18	Defects, forms & properties	Defects in steel; Market forms of steel; Properties of mild steel	
19	19	corrosion	Properties of hard steel; Corrosion of ferrous metals	
PAINTS WARNISHES AND DISTEMPERING				
20	20	Introduction	Constituents of paints, types of paints,	T1, Ch-17
21	21	Painting of new & old surfaces	Painting of new and old substrate paintings	
22	22	White washing, varnishing etc	white washing, Varnishing; Distempering.	
INSULATING MATERIALS				
23	23	Introduction	General ,thermal insulators	T1, Ch-2
24	24	types	Electrical insulators & Sound(ACOUSTIC)insulators	T1, Ch-13
UNIT-IV				
BRICK MASONRY				

25	25	introduction	Technical terms	T2, Ch-5
26	26	Types & suitability	Types of bonds in brickwork and their suitability	
27	27	Types & suitability	Types of bonds in brickwork and their suitability	
STONE MASONRY				
28	28	Introduction	Technical terms	T2, Ch-7
29	29	classification	Classification of stone masonry	
UNIT-V				
DAMP PROOFING				
30	30	Introduction & methods	Introduction, Methods of preventing dampness	T2, Ch-9
31	31	classification	Damp proofing materials and their classification;	
32	32	DPC under different situations	Methods of providing DPC under different situations	
FLOORS				
33	33	Introduction	Technical terms	T2, Ch-14
34	34	types	Different types of floors-concrete, mosaic, terrazzo, stone floor	
35	35	types	terrazzo, stone floor	
36	36	types	ceramic tile floors, venyl floors and wood floors	
ROOFS				
37	37	Introduction	Technical terms	T2, Ch-21 & 22
38	38	Types of roofs	Classification of roofs; Steel sloping roofs; Roof covering materials	
39	39	Types of flat roofs	Types of flat roofs.	
SCAFFOLDING, SHORING AND UNDERPINNING				
40	40	scaffolding	S	T2, Ch-11
41	41	shoring	Types of shoring	
42	42	underpinning	Methods of underpinning	
43	43	Form work & centering	Types of formwork; Centering.	T2, Ch-11
44	44	Revision of question paper	Building materials	
45	45	Revision of question paper	Building construction	

6.Self learning material:

unit	Topic	Source
1	Stones, bricks	Civil engg. Mterials by parbin singh
2	Lime, timber & Alternative building materials	Civil engg. Mterials by parbin singh
3	Steel, paints, varnishes ,distemper & insulating materials	Civil engg. Mterials by parbin singh

4	Brick masonry & stone masonry	Building construction by B.C Punmia
5	Floors, roofs, scaffolding, shoring and underpinning	Building construction by B.C Punmia

7.Evaluation Scheme:

Component	Duration (minutes)	% Weightage	Marks	Date & Time	Venue
Test-1	50 Min	8	10	09.08.10 09.30 to 10.20 AM	CSE005,101,104,105,106,201,202,204,205,209,301,309,502,509
Test-2	50 Min	8	10	13.09.10 09.30 to 10.20 AM	CSE005,101,104,105,106,201,202,204,205,209,301,309,502,509
Assignment submission		4	5	Continuous	
Assignment Test	50 Min	4	5	25.10.10 09.00 to 10.20 AM	CSE005,101,104,105,106,201,202,204,205,209,301,309,502,509
Quiz	30 Min	4	5	25.10.10 09.00 to 10.20 AM	CSE005,101,104,105,106,201,202,204,205,209,301,309,502,509
Regular Lab Evaluation	Continuous	10	50		
Comprehensive Lab Exam	3 Hrs	8	40		
Comprehensive Exam	3 Hrs	48	60		
Attendance for Theory & Tutorial		4	5	Continuous	
Attendance for Lab		2	10	Continuous	

8. Chamber consultation hour: Informed in the class in first week.

9. Notices: All notices regarding the course will be put in E-learning website.

10.Tutorial: Tutorial will be conducted by the respective in charge faculty. The tutorials are planned to supplement the material taught in the lectures and clear doubts. Student must attend registered section for tutorial in the respective

classroom. Class assignment, class tests and other evaluation components will also be conducted during tutorials. Students must actively participate in the tutorial and come prepared for it.

Course Coordinator