

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma in Architectural Assistantship

Semester: I

Subject Name: **Building Material - I**

Subject Code: **310006**

Teaching Scheme				Evaluation Scheme		
Theory	Tutorial	Practical	Total	University Exam (Theory) (E)	Mid Sem Exam (Theory) (M)	Internal Assessment (I)
4	0	0	4	70	30	0

Rationale:

This course introduces the student to the basic materials used in the construction industry. It also introduces the student to the manufacturing process and properties of these materials. Factors affecting the relation of materials are also discussed. Hence, this course provides a foundation for this programme.

Topic No.	Name of Topic	No. of Hours		
		Lect.	Pract.	Total
1.	Introduction	3		03
2.	Stone	10		10
3.	Bricks	10		10
4.	Clay Products	05		05
5.	Binding Materials	08		08
6.	Cement Products	03		03
7.	Aggregate	03		03
8.	Timber	08		08
9.	Ferrous Metal	03		03
10.	Non-ferrous metal	03		03
	Total	56		56

T.R.S. & EO's

T.R.S

1.1 Select suitable material for various items of building construction.

EO's

- 1.1.1 Understand properties and uses of various materials used for building construction.
- 1.1.2 Compare the different alternative materials suitable to given job.
- 1.1.3 Select the suitable materials for building construction for the given job.

Sr. No.	Course Content:
1.	Topic-1 Introduction: 1.1 Scope of subject 1.2 Enlist the various materials used in building industry 1.3 Properties of the given building materials 1.4 Factors affecting the selection of material
2.	Topic- 2 Stone: 2.1 Requirements, Characteristics. Uses of Building Stone. Different types of Stone like Granite, Basalt, Lime Stone, Slate, Marble, Sandstone. 2.2 Visual Physical inspection of different types of stone.
3.	Topic-3 Bricks: 3.1 Introduction to manufacturing of bricks. 3.2 Basic requirements of building bricks. 3.3 Properties and uses of different types of bricks. 3.4 Understand the situations where different types of bricks are used (with Sketches) bull nose, plinths chequered, king closer, queen closer, coping, cornice, arch, hollow, perforated.
4.	Topic-4 Clay Products: 4.1 Different types of clay products: 4.1.1 Roofing Tiles 4.1.2 Earthenware products 4.1.3 Stoneware products 4.1.4 China clay products 4.1.5 Terra cotta and other clay wares, porcelain.
5.	Binding Materials: 5.1 Lime:- Types, properties & uses of different types of Lime. 5.2 Comparison among properties of different types of lime.

	5.3 Lime mortar, different proportions 5.4 Properties of good mortar 5.5 Storing & slaking of lime 5.6 Field test of lime. 5.7 Cement:- - Chemical composition of O.P.C. 5.8 Different types of cement and its properties and uses. 5.9 Field test & laboratory test on cement. 5.10 Storage of cement. 5.11 Cement mortar, its proportion and uses. 5.12 Comparison between cement and lime as binding materials.
6.	Topic -6 Cement Products: 6.1 Asbestos cement sheets 6.2 A.C. Pipes 6.3 Cement hollow blocks, cement Jali & decorative Post for railing.
7.	Topic -7 Aggregate: 7.1 Types of aggregate, coarse and fine. 7.2 Properties and uses of aggregate. 7.3 Characteristics of good aggregate.
8.	Topic -8 Timber: 8.1 Characteristics of good timber. 8.2 Identification of timber (Sag, Deodar, Teak etc.) 8.3 Defects in Timber: 8.3.1 Natural defects 8.3.2 Defects due to seasoning 8.3.3 Defects due to fungi & insects. 8.4 Seasoning of timber and its importance. 8.5 Necessity of applying preservative to timber.
9.	Topic -9 Ferrous Metal: 9.1 Steel -- Properties, uses of different types of Steel (1) C.I. (2) W.I. (3) M.S. 9.2 Different forms of M.S. Sections. 9.3 Various categories of steel. 9.4 Advantages of Tor Steel over Mild Steel (M.S)

10.	Topic -10 Non-Ferrous Metal: 10.1 Aluminum 10.2 Properties & uses of Aluminum 10.3 Aluminum alloys- Properties & uses. 10.4 Different market forms of Aluminum.
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Instructional Strategies and Key Resources:

Sr. No	T.R.S	E.O.	Instructional Strategy	Key Resources
1	7.35	7.35.1	Input cum discussion followed by practice Assignment	Manufacture's data sheets Materials (i.e. thermocol clay. etc)
	7.35.2		Input cum discussion followed by practice Assignment.	
	7.34.3		Input cum discussion followed by practice Assignment.	

Note:

Market Survey of Latest Newly Available Material is to be carried out by the Students as Home Assignment

Reference Books:

1. Civil engineering materials - T.T.T.I. Chandigarh.
2. Engineering materials - S.C.Rangwala.