

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM

Course Title: Building Materials
(Code: 3315003)

Diploma Programmes in which this course is offered	Semester in which offered
Architectural Assistantship	First Semester

1. RATIONALE

This course introduces the student to the basic building 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.

2. LIST OF COMPETENCIES

The course content should be taught and implemented with the aim to develop different types of skills leading to the achievement of the following competency:

- Select different types of building materials according to requirement of the building elements

3. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE	PA	ESE	PA	100
3	0	0	3	70	30	0	0	

Legends: L-Lecture; T – Tutorial/Teacher Guided Student Activity; P -Practical; C – Credit;; ESE -End Semester Examination; PA - Progressive Assessment.

4. DETAILED COURSE CONTENTS

Unit	Major Learning Outcomes	Topics and Sub-topics
Unit – I Introduction	1.1 . Enlist the various materials used in building industry	1.1 Scope of subject 1.2 Various materials used in building industry 1.3 Properties of the given building materials 1.4 Factors affecting the selection of material
Unit– II Stone	2.1.Identify different types of Stone like Granite, Basalt, Lime Stone, Slate, Marble, Sandstone, etc.	2.1 Requirements and characteristics and Uses of Building Stone, different types of Stone like Granite, Basalt, Lime Stone, Slate, Marble, Sandstone, etc. 2.2 Visual & Physical inspection of different types of

Unit	Major Learning Outcomes	Topics and Sub-topics
		stone
Unit– III Bricks	3.1 Identify different types of brick manufacturing process 3b. Identify different types of bricks	3.1 Manufacturing of bricks 3.2 Basic requirements of building bricks 3.3 Properties and uses of different types of bricks 3.4 situations where different types of bricks are used (with sketches) bull nose, checkered bricks, plinths, king closer, queen closer, coping, cornice, arch, hollow, perforated
Unit– IV Binding Materials	4.1 Explain properties of lime 4.2. Explain properties of cement 4.3. Test properties of cement	4 .1 Lime: - Types, properties & uses of different types, Comparison among properties of different types of lime 4.2 Lime mortar, different proportions, Properties of good mortar ,Storing & slaking of lime, Field test of lime 4.3 Cement: - Chemical composition of OPC & PPC 4.4 Different types of cement and its properties and uses 4.5 Field test & laboratory test on cement 4.6. Storage of cement ,Cement mortar, its proportion and uses ,Comparison between cement and lime
Unit– V Aggregate	5.1 Explain properties of Aggregate 5.2. Test various properties of aggregate	5.1 Types of aggregate, coarse and fine 5.2 Properties and uses of aggregate 5.3 Characteristics of good aggregate
Unit – VI Timber	6.1 Check qualities of Timber 6.2 Identify defects in Timber 6.3 Explain seasoning process of timber 6.4 preserve the timber	6.1 Characteristics of good timber 6.2 Identification of timber (Teak, Deodar, etc.) 6.3 Defects in Timber ,Natural defects ,Defects due to seasoning ,Defects due to fungi & insects 6.4 Seasoning of timber and its importance 6.5 Necessity of applying preservative to timber

5. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY)

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total
1.	Introduction	03	2	4	0	6
2.	Stone	10	6	9	0	15
3.	Bricks	10	6	9	0	15
4.	Binding Materials	08	7	7	0	14
5.	Aggregate	03	2	4	0	6
6.	Timber	08	7	7	0	14
	Total	42	30	40	0	70

Legends:

R = Remembrance; U= Understanding; A= Application and above levels (Revised Bloom's Taxonomy)

6. SUGGESTED LIST OF ASSIGNMENTS (PRACTICAL)

The assignments should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the competency – Knowledge of building materials and their use

S. No.	Unit No.	Assignments (Practical)
1	Introduction	<ul style="list-style-type: none"> Conduct Market survey for building materials and their properties Site visits for studying and understanding use of building materials
2	Stone	<ul style="list-style-type: none"> Site visit to historical structure to study uses of stone.
3	Bricks	<ul style="list-style-type: none"> Visit to a construction site and prepare a report for all types of building materials
4	Binding Materials	
5	Aggregate	
6	Timber	

Note: The above assignment sessions are for guideline only. The remaining theory hours are for revision and guidance.

7. SUGGESTED LIST OF PROPOSED STUDENT ACTIVITIES

Following is the list of proposed student activities like: course/topic based seminars, internet based assignments, teacher guided self learning activities, and course/library/internet/lab based Mini-Projects, etc. These could be individual or group-based.

- Visits to building material exhibitions

8. SUGGESTED LEARNING RESOURCES

A. List of Books

S.No.	Author	Title of Books	Publication/year
1	Rangwala S.C.	Engineering Materials	Charotar Publishing House, latest
2	Punmia B.C.	Building Construction	Laxmi Publishing, latest
3	Arora, S.P., Bindra	Building Construction	Dhanpat Rai Publications, latest

9. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

- Prof. Bhaskar J. Iyer, H.O.D Architecture, Govt. Polytechnic, Vadnagar,
- Prof (Smt.) U.U. Anerao, H.O.D Architecture, Govt. Polytechnic for Girls, Ahmedabad
- Smt. P.A. Trambadia, Lecturer in Architecture, Govt. Polytechnic for Girls, Ahmedabad
- Shri. N.M. Chhatwani, Lecturer in Architecture, Govt. Polytechnic for Girls, Ahmedabad
- Smt. Sonal M. Jain, Lecturer in Civil Engg., Govt. Polytechnic, Vadnagar
- Shri. A.R. Rathod, Lecturer in Architecture, Govt. Polytechnic for Girls, Ahmedabad

Coordinator and Faculty Members from NITTTR Bhopal

- Prof. M.C. Paliwal, Associate Professor, Dept. of Civil Engg, NITTTR, Bhopal.