Lok Jagruti Kendra University
University with a Difference

Diploma in Architectural Assistantship

LJ Polytechnic

Course Code:025080104

Building Materials

Programme / Branch Name			Diploma in Architectural Assistantship			
Course Name	Building Materials				**Course Code**	025080104
Course Type	HSSC	BSC	ESC	PCC	OEC	PEC

Legends: HSSC: Humanities and Social Sciences Courses BSC: Basic Science Courses
ESC: Engineering Science Courses PCC: Program Core Courses
OEC: Open Elective Courses PEC: Program Elective Courses

1. Teaching and Evaluation Scheme

Teaching Hours / Week / Credits				**Evaluation Scheme**			
L	**T**	**P**	**Total Credit**	**CCE**	**SEE (Th)**	**SEE (Pr)**	**TOTAL**
3	0	0	3	50	50	-	100

Legends:
L: Lectures T: Tutorial P: Practical
CCE: Continuous & Comprehensive Evaluation
SEE (Th): Semester End Evaluation (Theory)
SEE (Pr): Semester End Evaluation (Practical)

2. Prerequisites

- ✓ No prerequisite

3. Rationale

All the building structures are composed of different types of materials. These materials are either called building materials or materials of construction. It is very essential for a builder, architect or engineer or contractor, to become familiar thoroughly with these building materials. 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.

4. Objectives

- ✓ To develop conceptual knowledge in building material.
- ✓ To select appropriate material in the given field situation.
- ✓ To develop awareness about the latest building materials.

5. Contents

Unit No.	Unit Name	Topics	Learning Outcomes	% Weightage	Hours
1.	**Introduction**	1.1. Importance of Building Materials 1.2. Physical Properties of Building Materials 1.3. Chemical Properties of Building Materials 1.4. Mechanical Properties of Building Materials 1.5. Classification of Materials Based Upon Their Uses	• Explain the Importance of Building Materials in Architecture • Describe Important Properties of Building Materials Used in Construction • Classify the Building Materials Based Upon Their Uses	08	03
2.	**Stones**	2.1. General 2.2. Classification of Rocks 2.3. Uses of Stones 2.4. Natural Bed of Stones 2.5. Qualities of a Good Building Stone 2.6. Artificial Stones 2.7. Common Building Stones of India 2.8. Types of Aggregate 2.9. Classification of Aggregates 2.10. Requirements of Aggregates 2.11. Tests for Aggregates 2.12. Fineness Modulus	• Identify Different Types of Stone Like Granite, Basalt, Limestone, Slate, Marble, Sandstone, etc. • Explain Properties of Aggregate • Test Various Properties of Aggregate	30	13
3.	**Bricks**	3.1. General 3.2. Comparison of Brickwork and Stonework 3.3. Composition of Good Brick Earth 3.4. Harmful Ingredients in Brick Earth 3.5. Manufacturing Process of Bricks 3.6. Qualities of Good Bricks 3.7. Comparison Between Clamp Burning and Kiln Burning 3.8. Tests for Bricks 3.9. Classification of Bricks 3.10. Uses of Bricks 3.11. Shape of Bricks	• Identify Different Types of Brick Manufacturing Process. • Identify Different Types of Bricks.	18	08

4.	**Binding Materials**	4.1 . Lime: Sources, Classification, I.S. Specifications of Lime, Properties & Uses of Different Types, Comparison Among Properties of Different Types of Lime 4.2. Cement: Physical Properties of Cement, Composition of Ordinary Portland Cement, Function of Cement Ingredients, Harmful Constituents of Cement 4.3. Field Test for Cement 4.4. Laboratory Test for Cement 4.5. Storage of Cement 4.6. Uses of Cement 4.7. Varieties of Cement 4.8. I.S. Specifications of Ordinary Cement	• Explain Properties of Lime • Explain Properties of cement. • Test Properties of Cement	24	12
5.	**Timber**	5.1 General 5.2. Classification of Trees 5.3. Structure of Tree 5.4. Seasoning of Timber 5.5. Defects in Timber 5.6. Qualities of Good Timber 5.7. Market Forms of Timber 5.8. Uses of Timber	• Check Qualities of Timber & Identify Defects in Timber. • Explain Seasoning Process of Timber. • Preserve the Timber.	20	08
				Total Hours	**42**

6. List of Practicals / Exercises

The practicals/exercises have been properly designed and implemented in an attempt to develop different types of skills, so that students can acquire the competencies/programme outcomes. Following is the list of practicals/exercises.

Sr. No.	Practicals / Exercises	Key Competency
1.	Conduct Market survey for building materials and their properties	Knowledge of building materials and their properties & price
2.	Visit a construction site and prepare a report for all types of building materials	Knowledge of alternative building materials and their properties & uses
3.	Site visit to a historical structure to study uses of various types of stones.	Knowledge of various types of stone and their properties
4.	Project-based on the application of various building materials	Designed to develop the understanding and application of various building materials in the given project

7. Suggested Specification Table for Evaluation Scheme

Unit No.	Unit Name	Distribution of Topics According to Bloom's Taxonomy					
		R %	U %	App %	C %	E %	An %
1.	Introduction	40	40	18	02	-	-
2.	Stones	20	30	45	05	-	-
3.	Bricks	20	30	45	05	-	-
4.	Binding Materials	30	30	35	05	-	-
5.	Timber	30	30	35	05	-	-

Legends: R: Remembering U: Understanding
App: Applying C: Creating
E: Evaluating An: Analyzing

8. Textbooks

1) Engineering Materials, S.C. Rangwala Charotar Publishing House
2) Building Construction, B.C. Punmia, Laxmi Publishing, latest

9. Reference Books

1) Building Construction, Arora, S.P., Bindra, Dhanpat Rai Publications, latest
2) Building Materials and Construction by S.K.Soni, S.K.Kataria & Sons.

10. Open Sources (Website, Video, Movie)

1) www.nptel.ac.in
2) https://www.youtube.com/playlist?list=PLcWeCCSvXbNn-oOcuAWtZ5Iq27fTzTr6-