



Lok Jagruti Kendra University
University with a Difference

Diploma in Architectural Assistantship



Course Code: 025080202

**Climate Responsive
Architecture**

| | | | | | | |
|--------------------------------|---------------------------------|--|-----|--------------------|-----------|-----|
| Programme / Branch Name | | Diploma in Architectural Assistantship | | | | |
| Course Name | Climate Responsive Architecture | | | Course Code | 025080202 | |
| Course Type | HSSC | BSC | ESC | PCC | OEC | PEC |

Legends: HSSC: Humanities and Social Sciences Courses
 ESC: Engineering Science Courses
 OEC: Open Elective Courses

BSC: Basic Science Courses
 PCC: Program Core 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 |
| 4 | 0 | 0 | 4 | 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

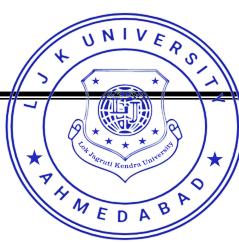
- ✓ No prerequisite required

3. Rationale

A very important component of sustainability in buildings has to do with the fact that they have to respond to the climate in which they are sited. This course aims to cover the various climates, mainly in India, and the implications of each for building design in these respective climates.

4. Objectives

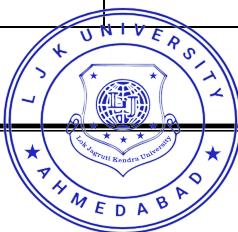
- ✓ Explain the role and importance of climate as one of the major determinants of built form.
- ✓ Identify climate as modifying factor of the built environment.
- ✓ Comprehend various climate-controlling devices.
- ✓ To understand climate and its impact on architectural design, fundamentals of climatology, and environmental studies.



5. Contents

| Unit No. | Unit Name | Topics | Learning Outcomes | % Weightage | Hours |
|----------|--|---|--|-------------|-------|
| 1. | Introduction to Climatology | 1.1. Importance of Climate 1.2. Elements of Climate 1.3. Classifications & Characters of Tropical Climate 1.4. Macro & Micro Climate | • To Study The Unique Characteristics of The Atmosphere in Controlling The Global Climate, Origin, Types of Climates, Causes. | 15 | 08 |
| 2. | Relation to Climate & Comfort | 2.1. Temperature Standards 2.2. Thermal Comfort 2.3. Thermal Comfort in India | • The Significance of Skin Temperature in This Context is Basis for a Measurement Device That Simulates The Human Skin Physically. | 15 | 08 |
| 3. | Lighting & Shading | 3.1. Introduction 3.2. Daylight Factors 3.3. Daylight Analysis 3.4. Shading Device 3.5. Target Daylight Factors 3.6. Effect of Shading on Daylight 3.7. Artificial Lighting | • It Helps to Understand Air Movement, Temperature, and Humidity at Comfortable Levels. | 20 | 16 |
| 4. | Ventilations | 4.1. Natural Ventilation 4.2. Need of Natural Ventilation in Building 4.3. Philosophy & Functions of Natural Ventilation 4.4. Types of Natural Ventilation 4.5. Ventilation & Buildings 4.6. Design of Openings for Ventilation 4.7. Building Form & Orientations | • It Helps to Understand Basic Climatic Conditions like Sun Path, Wind Direction Concerning Building Design. | 20 | 12 |
| 5. | Design Tools | 5.1. Sun Path & Wind Direction Diagram 5.2. Passive Heating & Cooling Design Strategies 5.3. Settlement Patterns & Site Planning 5.4. Shelter or Form 5.5. Green Building | • Day Lighting is The Practice of Placing Windows, Skylights, Other Openings, and Reflective Surfaces so That Sunlight Can Provide Lighting. | 28 | 14 |

Total Hours **56**



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. | Visit different places with different climate to understand its architectural style. | Knowledge of different climatic zones |
| 2. | Study of documentary related to architecture of a different climatic regions & Prepare a summary related to the study. | Knowledge of different climatic conditions to understand architectural style |
| 3. | Study of documentary related to types of lighting in architecture and prepare a summary related to the study. | Knowledge of various types of lights in architecture |
| 4. | Project-based on the application of various climatic zones | Designed to develop the understanding and application of various climatic zones in the given project |

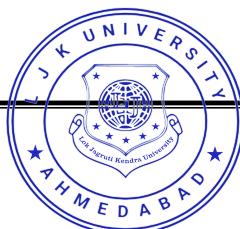
7. Suggested Specification Table for Evaluation Scheme

| Unit No. | Unit Name | Distribution of Topics According to Bloom's Taxonomy | | | | | |
|----------|-------------------------------|--|-----|-------|-----|-----|------|
| | | R % | U % | App % | C % | E % | An % |
| 1. | Introduction to Climatology | 25 | 25 | 50 | 00 | 00 | 00 |
| 2. | Relation to Climate & Comfort | 20 | 25 | 30 | 25 | 00 | 00 |
| 3. | Lighting & Shading | 10 | 40 | 40 | 10 | 00 | 00 |
| 4. | Ventilations | 10 | 25 | 35 | 30 | 00 | 00 |
| 5. | Design Tools | 10 | 40 | 40 | 10 | 00 | 00 |

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

8. Textbooks

- 1) Climate Responsive Architecture-A design handbook for energy efficient Buildings by Arvind Krishan



9. Reference Books

- 1) Manual Of Tropical Housing by Otto.Koenigsberger
- 2) Design Primer for Hot Climate by Allan Konya
- 3) Design with Climate by Victor Olgay
- 4) Man, Climate & Architecture by B.Givoni
- 5) Climatic Building Design by Donald Watson
- 6) Building in Hot Climates Building by Research Establishment

10. Open Sources (Website, Video, Movie)

- 1) <https://www.archdaily.com/tag/climate-responsive>
- 2) <https://www.hindawi.com/journals/mse/2018/5253102/>

