

<b>Program : Diploma in Civil Engineering</b>	
Course Code : <b>5014A</b>	Course Title: <b>Habitat Technology</b>
Semester : <b>5</b>	Credits: <b>3</b>
<b>Course Category: Program Elective</b>	
Periods per week: <b>3 (L:3, T:0, P:0)</b>	Periods per semester: <b>45</b>

### **Course Objectives:**

- To introduce basic principles of town planning and the concept of vernacular architecture
- To impart knowledge about the effects of different climatic elements which have to be considered before fixing the orientation of a building
- To introduce the principles of landscape architecture and to enable the students to prepare a landscape layout for a site
- To introduce the principles of interior design and to enable the students to design an interior space

### **Course Prerequisites:**

<b>Topic</b>	<b>Course code</b>	<b>Course name</b>	<b>Semester</b>
Building Drawing		Building Drawing and Estimating Lab	3

### **Course Outcomes:**

<b>COn</b>	<b>Description</b>	<b>Duration (Hours)</b>	<b>Cognitive Level</b>
CO1	Identify the principles of town planning and describe the concept of vernacular architecture	10	Understanding
CO2	Explain the concepts of climate responsive architecture, lighting, ventilation and acoustics	11	Understanding
CO3	Illustrate the landscape layout for a given plot using the principles of landscape architecture	11	Applying
CO4	Illustrate the 3D visualization of an interior space using the principles of interior design	11	Applying
	Series Test	2	

## CO - PO Mapping:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1		2					
CO2	2						
CO3	3						
CO4	3						

3-Strongly mapped, 2-Moderately mapped, 1-Weakly mapped

## Course Outline:

On completion of the course, the student will be able to:

Module Outcomes	Description	Duration (Hours)	Cognitive Level
CO1	<b>Identify the principles of town planning and describe the concept of vernacular architecture</b>		
M1.01	Identify the types of settlement patterns and dwelling typologies	1	Understanding
M1.02	Identify the principles of town planning and the methods for slum clearance	3	Understanding
M1.03	Discuss the significance of vernacular architecture and identify the characteristics of the vernacular architecture of Kerala	3	Understanding
M1.04	Explain the elements and principles of architectural design	3	Understanding

## Contents:

Habitat, Settlement Pattern, Dwelling/Housing Typology

Town Planning - Growth of towns - Principles of town planning, Zoning, Bye-laws, Master Plan

Housing - Importance of housing - Slums - Types - Causes - Characteristics - Effects - Agencies and Methods of Slum clearance, Mass Housing.

Vernacular architecture-Indigenous construction materials, Vernacular architecture of Kerala,

Primary elements of Architectural design - Point, Line, Plane, Volume. Form - Definition, Regular and irregular forms. Principles of composition- Balance, Rhythm, Emphasis, Proportion and scale, Movement, Contrast, Unity. Space- Exterior and Interior space

<b>CO2</b>	<b>Explain the concepts of climate responsive architecture, lighting, ventilation and acoustics</b>		
M2.01	Explain the basics of climatology and the elements of climate	2	Understanding
M2.02	Discuss the use of sun path diagrams and wind rose diagrams to fix the orientation of a building	3	Understanding
M2.03	Explain the indices of thermal comfort	3	Understanding
M2.04	Describe the concepts of day lighting, ventilation and acoustics	3	Understanding
	Series Test - I	1	

### **Contents:**

Climatology - Climate and Weather - Koppen classification - Macro Climate, Site Climate / Micro Climate: - Local factors - temperature and humidity - Air movement - Vegetation - Urban Heat Island

Elements of climate - temperature, humidity, precipitation, radiation, wind- Climate zones in India - Tropical Climate - Climatic design recommendations for tropical climate

Sun path diagram/Solar chart - Global wind pattern - Wind movement - Wind rose diagram.

Human comfort in buildings - Thermal comfort - Indices of thermal comfort - Reduction of solar heat gain-Sol-air temperature

Lighting of interior and exterior - measurement of light - Glare - Day lighting - Sky component - SP 41

Natural ventilation - Artificial ventilation- Functions of Ventilation - Factors affecting indoor airflow - airflow around buildings - Openings-Cross ventilation - Passive cooling

Acoustics - sources - Sound and noise - Noise control.

<b>CO3</b>	<b>Illustrate the landscape layout for a given plot using the principles of landscape architecture</b>		
M3.01	Define landscape architecture and identify the phytogeographical regions of India	2	Understanding
M3.02	Explain the principles and elements of landscape design	3	Understanding
M3.03	Explain the elements and features of Mughal, French, Japanese and English gardens	3	Understanding
M3.04	Sketch landscape layout for a given site	3	Applying

**Contents:**

Landscape Architecture: Phytogeographical regions of India

Principles - Unity, Repetition, Order, Proportion, Elements - Line, Form, Texture, Colour Visual weight

Components of Landscape design - Softscape - Classification of Plants, Decorative vegetation, Species typical to Kerala, Lawn, Turf - Hardscape - Ferrocement, Paving blocks, Stone items, Artificially moulded elements, walkways, patios, driveways, walls, Site furniture etc. - Water as an element

Formal and Informal Gardens - Elements and features of Gardens - Mughal Gardens - English Gardens - French Gardens - Japanese Gardens (Sketch layout). Traditional Home gardens of Kerala

Bubble diagram and concept sketches

<b>CO4</b>	<b>Illustrate the 3D visualization of a space using the principles of interior design</b>		
M4.01	Explain the elements and principles of Interior Design	2	Understanding
M4.02	Discuss the techniques to modify interiors	4	Understanding
M4.03	Familiarize with the anthropometric data sheets for interior design	2	Understanding
M4.04	Illustrate 3D visualization of an interior space	3	Applying
	Series Test - II	1	

**Contents:**

Interior Space - Positive and Negative space - Circulation space - Physical quantities and Attached qualities (Tactile, Thermal, Auditory and Olfactory)

Elements of Interior design - Point, Line, Plane, Form, Shape, Texture, Colour (Colour wheel, Munsell Scale) and Light

Principles of Interior Design - Proportion, Scale, Balance, Harmony, Unity, Variety, Rhythm, Emphasis

Modification of interiors - Space modulation to modify interiors - Structural and Non-structural modulation - Artificial Lighting - Cool and Warm lighting

Classic and modern decorative materials

Furniture - Classification based on styles, materials and function - Modular furniture

Finishes - for walls, floors and ceilings - criteria for selection

Fabric - curtains, blinds, carpets, rugs

Ergonomics and Anthropometry - Activity relationships - Planning and Three Dimensional Visualization of interiors

**Text / Reference:**

T/R	Book Title/Author
T1	Francis DK Ching- Architecture Form, Space, Order; John Wiley & Sons, Inc
R1	Koenigsberger et-al : Manual of tropical housing and building ; Orient Longman
R2	Martin Evans : Housing, Climate and Comfort ; The Architectural Press, London
R3	Town Planning; Rangwala, Charotar Publication
R4	Givoni- Man, Climate and Architecture, Applied Science Publishers
R5	Time Saver Standards for Landscape Design, Charles W. Harris and Nicholas T Dines
R6	Michael Laurie- An Introduction to landscape architecture, American Elsevier Publishing Company
R7	Time Saver Standards for Interior Design and Space, Joseph De Chiara, Julius Panero, and Martin Zelnik, McGraw-Hill, Inc

**Online Resources:**

Sl.No	Website Link
1	<a href="https://ncert.nic.in/ncerts/l/legy110.pdf">https://ncert.nic.in/ncerts/l/legy110.pdf</a>
2	<a href="https://www.yourhome.gov.au/passive-design">https://www.yourhome.gov.au/passive-design</a>
3	<a href="https://en.wikipedia.org/">https://en.wikipedia.org/</a>