

Bachelors in Arts with With Community Science
Category-V

**DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE-RMDA 14-HSC:
SUSTAINABLE BUILT ENVIRONMENT: CONCEPTS AND PRACTICES**

CREDIT DISTRIBUTION, ELIGIBILITY, PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical		
Sustainable Built Environment: Concepts and Practices	4	2	0	2	XII Pass	Appeared in Introduction to Resource Management

Learning Objectives

- To develop an understanding of the concept of sustainable habitat, its components and growth
- To build an understanding of the policies and programs for sustainable habitat
- To familiarize the students with energy and resource use by buildings and net zero buildings
- To develop an understanding of green building guidelines and norms

Learning Outcomes

The students would be able to:

- Understand the concept and importance of sustainable habitat, policies and programs for sustainable habitat
- Learn about resource use by buildings, impact of buildings on the environment
- Understand concept, criteria and implementation of green building guidelines and norms

THEORY
(Credits 2; Hours 30)

UNIT I: Sustainable Habitat

8 Hours

This unit covers sustainable habitats, their importance, components, growth, and related policies and rating systems.

- Concept of sustainable habitat- meaning, importance and need
- Impact of built environment on natural resources and environment
- Components and growth of sustainable habitat
- Policies and programs for sustainable habitat - national urban housing and habitat policy, national rating system for green buildings, national mission for sustainable habitat

UNIT II: Building and Resources

8 Hours

This unit focuses on energy and resource use in buildings, including conservation, sustainable materials and resource audits.

- Energy and resource use by buildings - sustainable and otherwise, energy intensive components of buildings, buildings as resource guzzlers
- Energy efficiency and energy conservation in sustainable habitat
- Material use, water sensitive design, waste water treatment
- Resource audit of buildings – focus on energy and water auditing

UNIT III: Green Building Rating Guidelines (GRIHA)

7 Hours

This unit introduces the global and Indian green building rating guidelines, focusing on ECBC and GRIHA.

- Meaning and concept; Green rating guidelines present globally
- Basic guidelines and norms in India, ECBC code
- GRIHA: Basics of GRIHA, background, footprint and registration process, GRIHA rating systems – background, documentation and implementation, criteria details, GRIHA case studies and success stories

UNIT IV: Green Building Rating Guidelines (LEED)

7 Hours

This unit introduces the global green building rating guidelines focusing on LEED and other emerging green building rating guidelines.

- LEED: Basics of LEED USGBC and LEED IGBC, Background, footprint and registration process, LEED rating systems - background and implementation, credit details, LEED case studies and success stories
- Other emerging green building rating guidelines in India

PRACTICAL (Credits 2; Hours 60)

I. Resource use in buildings:

1. Basic calculations of resource consumption in buildings (like energy consumption, water consumption, landscape water demand etc.)
2. Energy and water auditing of buildings
3. Calculation of Energy Performance Index (EPI)
4. Calculation of solar rooftop potential using various applications/websites
5. Calculation of rainwater harvesting potential

II. Green building rating guidelines

6. Understanding and compilation of the basic terms under ECBC/GRIHA/LEED
7. Critical evaluation and analysis of green buildings through case study approach to assess the green initiatives undertaken
8. Compilation of strategies and technologies to implement credits/criteria for an in-depth understanding of the various green building rating systems
9. Preparation of IEC material on current topics related to sustainable habitat
10. Field visits to various green buildings

Essential Readings

UNIT I

This unit explains sustainable habitats, its components and importance. It also throws lights on the policies related sustainable habitat and green building rating systems.

- **Naselli, F., Manahasa, E., Zeka, E., & Merxhani, K. (Eds.)** (2026). *Self-Sufficient Cities and Sustainable Habitats: Perspectives and Case Studies (The Urban Book Series)*. Springer.
- **Karuppu, K.** (2019). *Green Building Guidance: The Ultimate Guide for IGBC Accredited Professional Examination*. Notion Press.
- **Roychowdhury, A., & Somvanshi, A.** (2014). *Building Sense: Beyond the Green Façade of Sustainable Habitat*. Centre for Science & Environment.

UNIT II

This unit discusses resource use in buildings. It further explains energy conservation, sustainable materials and resource audits.

- **Manikala, A. R.** (2026). *Energy Conservation and Decarbonisation: Principles and Industrial Practices with 500 Audit Checklists*. New Delhi: Notion Press.
- **Karuppu, K.** (2019). *Green Building Guidance: The Ultimate Guide for IGBC Accredited Professional Examination*. Notion Press.

UNIT III

This unit explains the global and Indian green building rating guidelines, emphasizing on ECBC and GRIHA.

- **GRIHA Council, & The Energy and Resources Institute.** (2021). *GRIHA version 2019*. GRIHA Council & The Energy and Resources Institute.
- **Ministry of Power, Government of India.** (2017). *Energy Conservation Building Code 2017*. New Delhi: Bureau of Energy Efficiency.

UNIT IV

This unit introduces the global green building rating guidelines focusing on LEED and other emerging green building rating guidelines.

- **Indian Green Building Council.** (2023). *Introduction to Green Buildings & Built Environment*. BS Publications.
- **U.S. Green Building Council (USGBC).** (2023). *LEED green associate candidate handbook*. USGBC.

Suggested Readings

- **Yudelson, J.** (2007). *Green Building A to Z: Understanding the Language of Green Building*. New Society Publishers.
- **Redclift, M.** (2005). *Sustainable development (1987–2005): An oxymoron comes of age*. Wiley-Interscience.
- **Kubba, S.** (2009). *LEED practices, certification, and accreditation handbook*. McGraw-Hill.
- **Trivedy, R. K.** (2004). *Handbook of Environmental Laws, Acts, Guidelines, Compliances and Standards (2nd ed.)*. Hyderabad: Book Seller.

Note: Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi, from time to time