

DISCIPLINE SPECIFIC ELECTIVE COURSE**DSE HH 8E3: SUSTAINABLE BUILT ENVIRONMENT: CONCEPTS AND PRACTICES****CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE**

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical		
Sustainable Built Environment: Concepts and Practices DSE HH 8E3	4	2	0	2	Studied Semester 7	NIL

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

- 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.

SYLLABUS OF DSE HH 8E3**THEORY
(Credits2; Hours 30)****UNIT I: Sustainable Habitat****10 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

10 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

10 Hours

This unit introduces global and Indian green building rating guidelines, focusing on ECBC, GRIHA, LEED and other emerging rating systems.

- 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
- 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 **(Credit 2; Hours: 60)**

UNIT I: RESOURCE USE IN BUILDINGS

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

UNIT II: GREEN BUILDING RATING GUIDELINES

- Understanding and compilation of the basic terms under ECBC/GRIHA/LEED.
- Critical evaluation and analysis of green buildings through case study approach to assess the green initiatives undertaken.
- Compilation of strategies and technologies to implement credits/criteria for an in-depth understanding of the various green building rating systems.

- Preparation of IEC material on current topics related to sustainable habitat.
- Field visits to various green buildings.

Essential Readings

- 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.
- GRIHA Council, & The Energy and Resources Institute. (2021). *GRIHA version 2019*. GRIHA Council & The Energy and Resources Institute.
- 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.

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.

Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.