



**INTERNATIONAL QUALIFICATIONS
AND ASSESSMENT CENTRE (IQAC)**



Programme	Foundation Year Diploma in Architecture	
Unit Number/ Unit Title	Unit 6 Environmental design and sustainability	
Cohort Code:	L03EDS-U6	
Unit Level	3	
Total Credits/Hours	Total qualification time 120/ Total Guided learning hours 48/ Self-guided learning hours 72	
Credits	12 CATS/ 6 ECTS	
Lecturer		
Start Date		End Date

Unit Aims	To introduce students to the principles of environmental design and sustainability in architecture. This module emphasizes the importance of creating environmentally responsible and energy-efficient buildings.
Differentiation Strategies <i>(e.g. planned activities or support for individual learners according to their needs)</i>	Various approaches to addressing the various identified students needs will be adopted throughout the lesson. Such will include: <ol style="list-style-type: none">1. Progressive tasks2. Digital resources3. Verbal support4. Variable outcomes5. Collaborative learning6. Ongoing assessment7. Flexible-pace learning

Equality & Diversity	Variety of teaching techniques will be employed to ensure that the needs of each individual learner are met.
Safeguarding & Prevent	Safeguarding policies and the Prevent duty are strictly observed to ensure the safety, well-being, and inclusivity of all students and staff.
Health & Safety	SIRM H&S policies will be maintained.
Learning Resources	<p style="text-align: center;">Teaching and Learning Materials</p> <ul style="list-style-type: none"> • "Sustainable Design: A Critical Guide" by David Bergman. • "Sustainable Architecture: Principles, Paradigms, and Case Studies" by Habraken, Sorrell, and Stevenson. • "Introduction to Architectural Science: The Basis of Sustainable Design" by Steven V. Szokolay. • "Green Building: Guidebook for Sustainable Architecture" by Ulrich Knaack, Tillmann Klein, and Thomas Auer.

Learning Outcome	Assessment Criteria
1. Understand the principles of environmental design and sustainability.	1. Written Assessments: 1.1 Explain the key principles and concepts of sustainable design. 1.2 Define environmental impacts related to building construction and operation. 1.3 Describe the importance of sustainable practices in architecture.
2. Evaluate the environmental impact of buildings.	2 Practical Assessments: 2.1 Conduct assessments of buildings' environmental performance. 2.2 Analyze data related to energy consumption, water usage, and material selection. 2.3 Interpret and evaluate sustainability metrics and ratings (e.g., LEED, BREEAM).
3. Apply principles of energy efficiency and renewable energy sources.	3. Project-based Assessments: 3.1 Design architectural solutions that incorporate energy-efficient principles. 3.2 Specify renewable energy systems suitable for building projects. 3.3 Calculate and compare energy savings and environmental benefits.
4. Discuss green building standards and certifications.	4. Research-based Assessments 4.1 Research and analyze various green building standards and certifications. 4.2 Evaluate the applicability and benefits of different certification systems. 4.3 Compare and contrast the requirements and criteria of major green building certifications.
5. Apply sustainable design principles in architectural projects.	5. Design Studio Assessments: 5.1 Develop architectural designs that integrate sustainable design principles. 5.2 Demonstrate the use of sustainable materials and construction techniques. 5.3 Justify design decisions based on sustainability criteria and principles.
6. Communicate effectively about environmental design and sustainability.	6. Presentation and Report Assessments: 6.1 Present findings and proposals related to environmental design effectively. 6.2 Write clear and coherent reports on sustainability topics in architecture. 6.3 Engage in discussions and defend viewpoints on sustainability issues in architectural practice.

No	Topic	Learning Outcomes for Each Topic	Which assessment criteria does the session relate to?	Day/month/year/ signature
1	Introduction to Environmental Design and Sustainability in Architecture	Understand core definitions and values driving sustainability.	LO1	
2	Climate-Responsive Design: Working With Nature	Learn to design in harmony with local climate conditions.	LO1	
3	Passive Design Strategies: Orientation, Ventilation, Shading	Explore non-mechanical approaches to environmental comfort.	LO1	
4	Thermal Performance and Heat Transfer in Buildings	Understand building envelope efficiency and insulation.	LO1	
5	Site Analysis for Environmental Design (Topography, Sun Path, Wind)	Assess site conditions that influence sustainable design.	LO1	
6	Environmental Impact of Construction and Building Operations	Evaluate how architecture affects ecosystems and resource use.	LO2	
7	Life Cycle Assessment of Buildings	Measure the environmental impact of materials and energy over time.	LO2	

8	Carbon Footprint and Embodied Energy in Architecture	Quantify carbon emissions from materials and construction.	LO2	
9	Urban Heat Islands and Microclimate Design	Analyze the impact of buildings on urban environmental conditions.	LO2	
10	Energy Efficiency in Building Design	Learn principles for reducing operational energy use.	LO3	
11	Building Envelope Optimization and High-Performance Insulation	Explore technologies that reduce energy loss.	LO3	
12	Daylighting Design and Artificial Lighting Efficiency	Use light to reduce energy use and improve well-being.	LO3	
13	Heating, Cooling, and Ventilation Systems: Efficiency and Control	Study sustainable mechanical systems for indoor comfort.	LO4	
14	Renewable Energy in Architecture: Solar, Wind, and Geothermal	Apply on-site renewable energy generation in projects.	LO4	
15	Net Zero and Energy-Positive Building Concepts	Explore buildings that produce as much or more energy than they consume.	LO4	

16	Midterm	Midterm assessment covering all learning outcomes (theory and practical elements)	LO1, LO2, LO3	
17	Water Efficiency and Management in Architecture	Apply strategies like rainwater harvesting and low-flow systems.	LO1, LO3	
18	Introduction to Green Building Standards: LEED, BREEAM, WELL	Understand criteria and structure of certification systems.	LO4	
19	Environmental Assessment Methods: EDGE, DGNB, Living Building Challenge	Compare international benchmarks for sustainable buildings.	LO4	
20	Sustainable Material Selection and VOC Emissions	Learn how material choices influence certification outcomes.	LO4	
21	Eco-Labeling and Product Transparency	Understand how to identify sustainable material credentials.	LO4	
22	Integrating Sustainability in Concept Design	Begin to embed green thinking from the earliest design stages.	LO5	
23	Designing for Natural Light, Air, and Green Spaces	Apply biophilic design and passive systems in projects.	LO5	
24	Low-Impact Structures and Off-Grid Buildings	Explore alternative architectural approaches.	LO5	

25	Climate-Adaptive and Resilient Architecture	Design for climate risk and future-proofing.	LO5	
26	Introduction to Environmental Design Software (e.g., ClimateStudio, Sefaira)	Use digital tools to evaluate design performance.	LO5	
27	Communicating Sustainability Through Diagrams and Infographics	Learn to present complex environmental concepts visually.	LO6	
28	Writing and Presenting Sustainability Reports	Develop written and oral skills for sustainability advocacy.	LO6	
29	Case Studies of Sustainable Architecture (e.g., BedZED, Bosco Verticale, The Edge)	Analyze and communicate lessons from leading green projects.	LO5, LO6	
30	Student Design Review: Sustainable Studio Project Presentation	Present and critique sustainable solutions in peer settings.	LO5, LO6	
31	Final Exam	Reflect on the full spectrum of sustainability in architectural practice.	LO1 – LO6	