INTERNATIONAL QUALIFICATIONS

AND ASSESSMENT CENTRE (IQAC)

«Approved»

2025 y. «16» 10

Programme	**Level 6 Diploma in Architecture**		
Unit Number/ Unit Title	**Unit 1 Material and Architectural Technology I**		
Cohort Code:	L06MATI-U1		
Unit Level	6		
Total Credits/Hours	Total qualification time 200/ Total Guided learning hours 90/ Self-guided learning hours 110		
Credits	20 CATS/ 10 ECTS		
Lecturer			
Start Date		**End Date**	

Unit Aims	This unit introduces learners to contemporary construction materials, their properties, and applications in architectural design. It focuses on performance, durability, and the sustainable use of materials.
Differentiation Strategies *(e.g. planned activities or support for individual learners according to their needs)*	
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	**Teaching and Learning Materials**
	• Ashby, M. (2011). Materials Selection in Architecture. Butterworth-Heinemann. • Addington, M. & Schodek, D. (2005). Smart Materials and Technologies. Elsevier.

	• Allen, E. & Iano, J. (2019). Fundamentals of Building Construction. Wiley.

Learning Outcome	Assessment Criteria
LO1. Understand the properties of key materials.	**Evaluate thermal, acoustic, and structural performance of selected materials.**
LO2. Analyze material behavior in buildings.	**Examine material responses to environmental conditions and lifecycle.**
LO3. Apply material selection in design.	**Justify appropriate materials in given design contexts.**
LO4. Explore innovation in materials.	**Investigate smart, recycled, or bio-based materials.**

No	Topic	Learning Outcomes for Each Topic	Which assessment criteria does the session relate to?	Day/month/ year/ signature
1	Introduction to Building Materials	Identify categories of construction materials and their roles in architecture.	LO1	
2	Properties of Stone and Brick	Understand durability, compressive strength, and aesthetic value.	LO1	
3	Timber: Types, Grading, and Performance	Analyse timber properties for structural and finish applications.	LO1	
4	Concrete Technology	Understand concrete composition, reinforcement, and curing.	LO1	
5	Steel and Metal Alloys	Examine steel's structural use and corrosion resistance.	LO1	
6	Glass: Types and Performance	Explore thermal, acoustic, and safety properties of glass.	LO1	
7	Material Testing Methods	Use lab-based techniques to test materials (e.g., tensile, compression, fire resistance).	LO2	

8	Hygrothermal Performance of Materials	Analyse material response to moisture and temperature.	LO2	
9	Acoustic and Fire Performance	Evaluate how materials support safety and occupant comfort.	LO2	
10	Thermal Mass and Energy Efficiency	Analyse thermal performance for passive design strategies.	LO2	
11	Sustainable Timber and Forest Certification	Apply sustainability standards in timber selection.	LO3	
12	Selecting Materials Based on Context	Choose materials considering climate, building type, and user needs.	LO3	
13	Detailing for Movement and Expansion	Apply correct detailing to address thermal and structural movement.	LO3	
14	Moisture Control and Vapour Barriers	Incorporate materials to prevent condensation and water ingress.	LO3	
15	Façade Systems and Material Assemblies	Integrate multiple materials into weatherproof external systems.	LO3	
16	Midterm	**Midterm assessment** covering all learning outcomes (theory and practical elements)	LO1, LO2, LO3	
17	Green and Bio-based Materials	Investigate new materials such as hempcrete, mycelium, and bioplastics.	LO4	

18	Smart Materials and Responsive Façades	Explore phase-change, shape-memory, or sensor-based materials.	LO4	
19	Additive Manufacturing and 3D Printed Materials	Assess impact of 3D printing on future material use.	LO4	
20	High-performance Insulation Materials	Examine aerogels, vacuum panels, and other advanced insulations.	LO4	
21	Nanomaterials in Architecture	Study coatings, self-cleaning surfaces, and nano-enhanced concrete.	LO4	
22	Material Failures and Case Studies	Analyse failure modes and what went wrong in notable case studies.	LO2	
23	Circular Economy in Material Selection	Select materials with lifecycle reuse and recyclability in mind.	LO3	
24	Local vs. Global Material Sourcing	Compare environmental and economic impacts of material origins.	LO3	
25	Building Codes and Material Compliance	Understand regulatory standards for material use.	LO1	
26	Detailing Joints and Transitions	Practise drawing material connections in section.	LO3	

27	Sample Board and Specification Workshop	Create presentation boards and write specifications for a material palette.	LO3	
28	Collaborative Material Review	Peer critique of selected material strategies for a project.	LO4	
29	Technical Presentation: Material Justification	Present material selections for a chosen building scenario.	LO3	
30	Final Portfolio Assembly	Compile samples, drawings, and rationales from previous weeks.	LO1 – LO4	
31	Final Exam: Reflective Review and Innovation Roundtable	Discuss future directions in material technology and learning reflections.	LO4	