INTERNATIONAL QUALIFICATIONS

AND ASSESSMENT CENTRE (IQAC)

«Approved»

2025 y. «___» _____

Programme	**Level 5 Extended Diploma in Architecture**		
Unit Number/ Unit Title	**Unit 12 Digital Design Tools: BIM and 3D Modeling**		
Cohort Code:	L05DDT-U12		
Unit Level	Level 5		
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 digital design tools used in the architectural workflow, including Building Information Modelling (BIM) and 3D modelling software. The unit emphasises how these tools enhance collaboration, precision, and documentation from concept to construction.
Differentiation Strategies *(e.g. planned activities or support for individual learners according to their needs)*	Various approaches to addressing the various identified students' needs will be adopted throughout the lesson. Such will include: 1. Progressive tasks 2. Digital resources 3. Verbal support 4. Variable outcomes 5. Collaborative learning 6. Ongoing assessment 7. 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	**Teaching and Learning Materials** • Eastman, C. et al. (2018). BIM Handbook. Wiley. • Krygiel, E. & Nies, B. (2015). Mastering Revit Architecture. Sybex. • Ching, F. D. K. & Juroszek, S. P. (2014). Design Drawing. Wiley. • RIBA (2020). Digital Plan of Work. RIBA Publishing. • Mitchell, W. J. (1995). The Reconfigured Eye: Visual Truth in the Post-Photographic Era. MIT Press.

Learning Outcome (The learner will:)	Assessment Criteria (The learner can:)
LO1. Use BIM software for architectural modelling and documentation.	1. Practical Lab Submission: 1.1 Create parametric building models with data-rich elements. 1.2 Generate schedules and construction documentation.
LO2. Apply 3D modelling techniques to architectural concept development.	2. Project-Based Assignment: 2.1 Model architectural forms using tools like Rhino or SketchUp. 2.2 Export models for visualisation and rendering.
LO3. Understand interoperability and data sharing across platforms.	3. Technical Report: 3.1 Discuss IFC standards and data exchange workflows. 3.2 Evaluate cloud-based collaboration and version control.
LO4. Present digital design work using visualisation tools.	4. Portfolio Submission: 4.1 Produce diagrams, renderings, and animations. 4.2 Curate a digital portfolio for presentation.

No	Topic	Learning Outcomes for Each Topic	Which assessment criteria does the session relate to?	Day/month/ year/ signature
1	Introduction to Digital Design in Architecture	Understand the role of BIM and 3D tools in modern architectural practice.	LO1	
2	BIM Basics and Interface Navigation	Explore Revit or ArchiCAD interface, tools, and project setup.	LO1	
3	Creating Basic Architectural Elements in BIM	Model walls, doors, windows, and floors using BIM.	LO1	
4	Setting Up Levels, Grids, and Views	Organise project structure and view management.	LO1	
5	Families and Components in BIM	Use pre-built and custom components effectively.	LO1	
6	Conceptual Massing and Site Topography	Create site models and building massing in BIM.	LO1	
7	Annotation, Tags, and Schedules	Add dimensions, text, and generate automatic schedules.	LO1	
8	Documentation and Sheet Layouts	Produce drawing sheets and manage views for print.	LO1	

9	Clash Detection and BIM Coordination	Use coordination tools to detect and resolve design conflicts.	LO3	
10	File Sharing and Collaboration in BIM	Understand worksharing, linking, and cloud collaboration.	LO1	
11	Introduction to 3D Modelling Software (e.g., SketchUp)	Explore interface and basic modelling tools.	LO2	
12	Solid and Surface Modelling Techniques	Create complex architectural forms.	LO2	
13	Modeling with Precision and Modifiers	Use snapping, groups, and editing tools for accuracy.	LO2	
14	Working with Layers and Components	Organise models using hierarchical structures.	LO2	
15	Importing CAD and BIM Models into 3D Platforms	Learn interoperability between software tools.	LO2	
16	Midterm	**Midterm assessment** covering all learning outcomes (theory and practical elements)	LO1, LO2, LO3	
17	Material Mapping and Texturing	Apply materials for visualisation and rendering.	LO4	
18	Lighting and Scene Setup for Renders	Use lighting for realistic rendering.	LO4	
19	Camera Views and Composition in 3D	Frame views for architectural presentations.	LO4	

20	Rendering Techniques and Output Settings	Produce rendered stills and walkthroughs.	LO4	
21	Real-time Rendering and VR Tools	Introduce tools like Enscape or Twinmotion.	LO4	
22	BIM Detailing and Construction Documentation	Model construction details and documentation.	LO1	
23	Schedules and Quantities in BIM	Generate quantity take-offs and cost estimations.	LO1	
24	Sustainable Design Integration in BIM	Use BIM tools to analyse energy and material efficiency.	LO1	
25	Team Collaboration with Cloud Platforms	Practice co-authoring and revision tracking.	LO3	
26	Modelling Interiors and Furniture	Create interior layouts and components.	LO2	
27	Creating Animated Walkthroughs	Produce videos for design presentations.	LO4	
28	Data Exchange Between Platforms (IFC, DWG, SKP)	Handle data conversion and maintain model integrity.	LO3	
29	Final Design Modelling Project – Part 1	Start comprehensive digital design project.	LO1-LO4	
30	Final Design Modelling Project – Part 2	Finalise and present models with documentation.	LO1 – LO4	
31	Final Exam: Peer Review and Digital Portfolio Development	Present and reflect on digital work outputs.	LO1 – LO4	