Module Title:	BIM and Representation 2
Language of Instruction:	English

Credits:	5

NFQ Level:	8

Module Delivered In	1 programme(s)

Teaching & Learning Strategies:	• Advanced Studio-based project & problem-based learning in an architectural technology context, • one-to-one reviews/tutorials and group/class 'crits' to provide student feedback • Group/team work utilised as appropriate Lecture format utilised to provide theoretical instruction in BIM and Image Manipulation software tools • Structured marking of projects as continuous assessment allocation of marks for: Technical drawing and image creation skills, visual communication skills, specifications.

Module Aim:	• To provide a fusion of BIM best practice with the technical design development in the Studio module • To explore the use of BIM in conjuction with Graphic Manipulation software as a sophisticated presentation and communication tool • To develop modelling, drafting and rendering skills, and presentation abilities to a professional level • To develop teamwork and collaboration within the BIM and studio environment

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Apply advanced BIM techniques to the representation of the complex material and structural characteristics of sustainable and innovative construction approaches
LO2	Integrate the use of multi-layered image manipulation software and the 3D visualisation properties of BIM to communicate strategic, material, structural and informational qualities of buildings and building elements for analytical and presentation purposes
LO3	Developing skills in creating and editing parametric and dynamic (family) components in a BIM environment
LO4	Operate within a collaborative BIM and studio environment
LO5	Apply presentation skills to the production of documentation with a deliberate communicative purpose

Pre-requisite learning	
Module Recommendations *This is prior learning (or a practical skill) that is recommended before enrolment in this module.*	
No recommendations listed	
Incompatible Modules *These are modules which have learning outcomes that are too similar to the learning outcomes of this module.*	
No incompatible modules listed	
Co-requisite Modules	
No Co-requisite modules listed	
Requirements *This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.*	
No requirements listed	

Module Content & Assessment

Indicative Content

Advanced Customisation of Buildings, Families and Project Settings
(a) Advanced modelling techniques for walls, stacked walls, curtain walls, ceilings, floor, slabs, roofs, columns, beams, truss, bracing, foundation, piling, stairs, ramps and railings. (b) Creating advanced family types in the project environment and family editor.

Advanced Detailing Techniques, Collaboration and Sustainable Design.
(a) Creating 3D axonometric details in 3D view and adding annotation to the 3D detail. (b) Exporting and importing details and views from Revit projects. (c) Incorporating a sustainable design approach from the beginning. (d) Creating solar studies and create animated sun studies. (e) Leverage schedules to track sustainable design strategies. (f) Develop your design using work sharing, workflows and collaboration. (g) Understand the principles of groups and links. (h) Collaborating, tracking changes and coordinating processes.

Create Professional-quality Construction Documentation.
(a) Using callouts create views, sheets, annotation, tag, schedules, legends, 3D sections, elevations, sections, details and keynotes. (b) Rendering, real-world surfaces with architectural materials. Creating and editing materials from digital images using real world scale.

Evaluate Onsite Energy Systems and Green Building Studio.
(a) Solar photovoltaics, energy storage, wind turbines, building and site hydrology. (b) Create conceptual and detailed energy analysis of your BIM models.

Mechanical, Electrical and Plumbing (MEP)
Project collaboration, schedules, legends, HVAC heating and cooling, ductwork, piping, lighting, power and communications, mechanical systems, electrical systems and circuits, plumbing systems and fire protection.

3Ds Max design
(a) Assign images as environmental maps. Create and edit materials and maps using material editor. (b) Understand a logical approach for calculating mental ray rendering. (c) Understand Global Illumination, Indirect Illumination and Final Gather. (d) Creating daylight systems, setting the material reflectivity and understanding photometric lights. (d) Understanding and Creating Animations (e) Understanding the World of Video Time, adding and adjusting cameras. Understanding and editing keyframes. Creating walkthroughs, understanding animation file output options.

Photoshop Essentials
(a) Pixels, Bitmaps, Grayscale to RGB versus CMYK. Setup raster printer in AutoCAD matching scale and resolution. (b) Natural selection, transformation, distortion, hiding and showing. (c) Getting into Perspective (d)Establishing the horizon, introducing vanishing points filters; two point and three point perspective. Move, copy and clone in perspective. (e) Light and Shade (f) Shadows on the ground and walls, shading using dodge and burn (g) The Third Dimension (h) Adding depth to flat artwork, matching existing perspective and using displacement maps. (i) Plans and Elevations (j) Exporting images from BIM, converting vector to raster and creating depth with shadows. Setting background and swatches, adding noise for textures. Reflecting clouds and environment in glass and extracting realistic figures.

Assessment Breakdown	%
Project	100.00%

No Continuous Assessment

Project

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	Thesis Project	1,2,3,4,5	85.00	End-of-Semester
Project	Primer project	1,2,3,4	15.00	Week 3

No Practical

No End of Module Formal Examination

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
Lecture	12 Weeks per Stage	3.33
Lecture	12 Weeks per Stage	0.67
Independent Learning	30 Weeks per Stage	2.57
	Total Hours	125.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMARC_B	Bachelor of Science (Honours) in Architectural Technology	8	Mandatory