Module Title:	BIM, CAD and Information Technology 5
Language of Instruction:	English

Credits:	5

NFQ Level:	7

Module Delivered In	2 programme(s)

Teaching & Learning Strategies:	Studio-based projects & problem-based learning to develop the learners' problem- solving methodology to an advanced level, in an architectural technology context, with 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 Revit/BIM/Enscape3d /Photoshop/Cad software tools • Formative assessment given through one-to-one reviews/tutorials and group/class 'crits' & reviews • Structured marking of projects as continuous assessment, involving allocation of marks for: - Final drawings, details, specifications & visualization

Module Aim:	The aims of this module are: • To assist learners in understanding the relative & complimentary uses of the major tools at their disposal, including manual and Cad drawing, 3D/Revit BIM modelling, advanced presentation and written specification • To integrate building information modelling (BIM) into Studio Projects. • To enhance elevations and plans using Photoshop's layer style effects. • To use Enscape3d to create hyper-realistic 3D visualizations of your designs.3d render packages are subject to change depending on availability in the market

Learning Outcomes
On successful completion of this module the learner should be able to:

LO1	Use more advanced modelling techniques and sustainable design strategies to construct and evaluate different building of medium complexity, focusing on the highest professional standards.
LO2	Create plans, elevations, sections, live callout details, 3D details, 3D views, schedules, legends of building components and callouts of BIM models to Produce fully detailed working Architectural drawings. Create 3d design visualisations of buildings and its spaces and show a variety of design options. •Create and manage live detail callout views ensuring that they are tied parametrically to sheets and all references are dynamic and coordinated. Create 2d and 3D details fully annotated, using details, parts, and assemblies where applicable.
LO3	Introduce mechanical, electrical and plumbing (MEP) systems into BIM models and evaluate the sequence in which MEP services are used. Evaluate onsite energy systems and create detailed energy analysis of BIM models. IESVE to create conceptual and detailed energy analysis of your models. analysis packages are subject to change depending on availability in the market.
LO4	Use Revit tools to import and export a wide range of information with other applications. Dwg files,pdf and jpeg images etc. Extract entourage objects from photographs and use them in architectural illustrations, renderings, plans and elevations.
LO5	Setup and manage a BIM collaborative environment and run clash detection to immediately see conflicts among architectural, structural, and mechanical components. Navisworks to be explored for Clash Detection

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.*
Learners must have successfully completed BIM in (both BIM 3 & BIM 4)

Module Content & Assessment

Indicative Content

REVIT / Building Information Modelling
Use Revit/BIM and sustainable design strategies to produce and prepare buildings of medium complexity, focusing on the highest professional standards.

BIM Customisation of Systems, Families and Project Settings
• (a) Create advanced modelling elements: Covering the following topics; grids & levels, walls, ceilings, floors, windows, doors, foundations and piling, beams and truss systems, stairs, ramps and railings; advanced modelling features. Curtain walls. (b) Advance design techniques. Roofs and slabs: advance shape editing. (c) Project phases, worksets, filters and design options.(d) Create, modify and save view templates and load them into projects. (f) Massing families, in-place massing, form manipulation, terrain modelling, analysing the building concept. (g) Export Revit models in forms that others can read and how to import information that is relevant to their projects from other sources. Covering the following topics; exporting, importing and linking, working with imported files, working with 3d DWG files, and starting a drawing from a scanned image file. (h) Room definition and boundary elements, room schedules, room area and volume, colour schemes and

Detailing Techniques and Sustainable Design
(a) live callout detail views use annotation tools and component categories, detail component libraries, repeating details, lines and arc, text, tags and keynotes. (b) Create perspective 3D sectional views that slice through the model, providing stunning graphics that can help better explain plans, sections, details and 3D in one view. (c) Incorporating a sustainable design approach from the beginning, leverage schedules to track sustainable design strategies. (d) Generate an animated solar study that can show the effect of shadows over time, throughout the year. (f) IESVE to create conceptual and detailed energy analysis of your models. analysis packages are subject to change depending on availability in the market

Create Professional-quality Construction Documentation
(a) Create sheets, views, Browser organisation, annotation, tags, schedules, legends, sections, 3D sections, elevations, details and keynotes. (b) Creating and populating sheets, working with schedules and legends, publishing and document management. (c) Create material finishes from digital images using real world scale. (d) Render real-surfaces with architectural materials.(e) revisions on sheets ,scope boxes

Mechanical, Electrical and Plumbing (MEP)
(a) Link model into MEP templates, setup project standards. (b) HVAC heating and cooling, ductwork, piping, lighting, power and communications, mechanical systems, electrical systems and circuits, plumbing systems and fire protection.

Enscape3d / Vray / Blender / Unity
(a) Export Revit models, and link the file into Enscape3d or Vray so that you can create more advanced rendering, and setup animated walk- throughs. (b) Simulate lighting effects accurately with global illumination. (c) Use Enscape3d, Vray, Lumion & Blender 3d render packages are subject to change depending on availability in the market

Navisworks
Import and manage your BIM model in Navisworks, setup rules for object and geometry and combine 3d models and review,run clash detection on your models.

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	100.00	Sem 2 End

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	2.00
Tutorial	12 Weeks per Stage	2.00
Estimated Learner Hours	12 Weeks per Stage	6.50
	Total Hours	126.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMARC_B	[Bachelor of Science (Honours) in Architectural Technology](#)	6	Mandatory
CW_CMART_D	[Bachelor of Science in Architectural Technology](#)	6	Mandatory