

Module Title:	Graphics, CAD and BIM I
Language of Instruction:	English
Credits:	10
NFQ Level:	6
Module Delivered In	No Programmes
Teaching & Learning Strategies:	<ul style="list-style-type: none"> • 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 • Lecture format utilised to provide theoretical instruction in CAD/BIM/software tools
Module Aim:	<p>The aims of this module are :</p> <ul style="list-style-type: none"> • To introduce Building Information Modelling (BIM) into studio projects. • To give students the computer skills required to communicate effectively in a modern technical environment. • To develop a basic knowledge of buildings and sustainable site development. • To create a wide range of working drawings and to use detail components in drafting views. • To dress up basic elevations and plans using Photoshop and extract entourage objects from photographs. • To familiarise students with all aspects of information technology relating to architectural technology and the architectural practice.

Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	• Use modelling techniques and sustainable site development strategies to construct domestic buildings and small scale commercial buildings, using the latest BIM software.
LO2	• Use Revit tools to import and export a wide range of information with other applications and create basic Revit families.
LO3	• Create annotation, tags dimension, text and keynotes in BIM and create automated schedules and legends of building components.
LO4	• (a) Create sheets: plans, elevations, sections, 3D sections, details, 3D details, 3D views and callouts from BIM models. (b) Produce fully detailed working drawings.
LO5	• Render real-world surface with architectural materials and extract entourage and enhance elevations and plans using Photoshop.
LO6	• Model development methodology: How project develop from templates, the complexity of components and controlling graphical display
LO7	• Create and manage drafting views ensuring that they are tied parametrically to sheets.

Pre-requisite learning		
Module Recommendations <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>		
5295	GRAP H2504	Graphics, CAD & BIM I
6675	TECH H1507	Information Technology & CAD
Incompatible Modules <i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>		
No incompatible modules listed		
Co-requisite Modules		
No Co-requisite modules listed		
Requirements <i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>		
No requirements listed		

Module Content & Assessment

Indicative Content

Building Information Modelling

Use BIM and sustainable design strategies to construct buildings of medium complexity, focusing on the highest professional standards.

BIM Customisation of Systems, Families and Project Settings

(a) Get acquainted with the graphical user interface of the latest version of Autodesk Revit Architecture. (b) Setting up project environments. (c) Create basic modelling elements: Covering the following topics; levels, grids, walls, floor, ceiling, roofs, doors, windows, curtain walls, foundation and piling, columns, beams, bracing and truss systems, stairs, ramps and railings. (d) Modifying and creating family geometry in BIM. (e) Creating views, basic legends and schedules. (f) Geometry formation and in-place families.

Create Professional-quality Construction Documentation

(a) Control the Revit display and plotting environments. (b) Placing views on sheets, create presentation techniques for plans, elevations, sections, callouts of drafting views, 3D isometric, perspective views, animated sun studies, and simple renderings that let you explore materials and lighting. (c) 2D draughting, annotation and component categories, detail component libraries, repeating details, tags, and keynotes. (e) Publishing, populating sheets, working with schedules and document management.

Wall creation, manipulation and Site Modelling

(a) Wall types, working with levels, attaching walls, editing wall shapes. (b) Creating and editing toposurfaces, building pads, regions and sub-regions.

Photoshop

(a) Extract entourage and enhance elevations and plans using Photoshop. (b) Render real-world surface with architectural materials.

Assessment Breakdown

%

Project

100.00%

No Continuous Assessment

Project

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	Produce a BIM model of a detached two-storey building. Analyse the building in terms of light, heat, ventilation, comfort and health within the framework of existing building regulations, codes of practice and other appropriate legislation in Ireland.	1,2,3,4,5,6,7	10.00	Week 4
Project	Produce good quality working drawings of a Community Centre in (BIM), using the studio unit as a vehicle, to establish best practice industrial standards. Explore how the following construction options can be integrated into a timber frame building to meet the fundamental requirements of passive standards. • Well insulated building envelope. • Minimised heat loss through thermal bridging. • Significantly reduced structural air infiltration • Optimal use of passive solar and internal heat gains.	1,2,3,4,5,6,7	30.00	Sem 1 End
Project	Site Layout for Sustainable Development. Investigate sustainable strategies using BIM, such as energy use, access to natural light, human health and productivity, water conservation and reduce the building carbon footprint. There are five key points to take into consideration to make your project more sustainable. Optimise site orientation, daylight and sun shading, building envelope, building mass, and the use of carbon-free resources such as sunlight, wind, and rain.	1,2,3,4,5,6,7	20.00	Week 23
Project	Apartment Building: General arrangement plans and details, vertical and horizontal details fully annotated. Site layout plan showing access and parking/traffic management, drainage, services, landscape and site finishes. Long and short sections. Use key plans, keynotes, legends and schedules in your presentation. Simulate and visualize design alternatives, analyse performance and create 3D visualisation of buildings and its spaces and show a variety of design options.	1,2,3,4,5,6,7	40.00	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		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	30 Weeks per Stage	2.00
Tutorial	30 Weeks per Stage	2.00
Estimated Learner Hours	30 Weeks per Stage	6.00
Total Hours		300.00

