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| <b>Module Title:</b>   | BIM, CAD and Information Technology 5   |
| <b>Language of Instruction:</b>  | English   |
| <b>Credits:</b>  | 5   |
| <b>NFQ Level:</b>  | 7   |
| <b>Module Delivered In</b>   | <a href="#">2 programme(s)</a>  |
| <b>Teaching &amp; Learning Strategies:</b>   | 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 |
| <b>Module Aim:</b>   | 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   |
| <b>Learning Outcomes</b>   |   |
| <i>On successful completion of this module the learner should be able to:</i>  |   |
| 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   |
| <b>Pre-requisite learning</b>  |   |
| <b>Module Recommendations</b><br><i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>         |   |
| No recommendations listed  |   |
| <b>Incompatible Modules</b><br><i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i> |   |
| No incompatible modules listed   |   |
| <b>Co-requisite Modules</b>  |   |
| No Co-requisite modules listed   |   |
| <b>Requirements</b><br><i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>          |   |
| 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**

| <b>Workload: Full Time</b> |                    |  |
|----------------------------|--------------------|--|
| <i>Workload Type</i>       | <i>Frequency</i>   | <i>Average Weekly Learner Workload</i> |
| 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     | <a href="#">Bachelor of Science (Honours) in Architectural Technology</a> | 6        | Mandatory |
| CW_CMART_D     | <a href="#">Bachelor of Science in Architectural Technology</a>           | 6        | Mandatory |