

Module specification

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Module Code	AUR496_AURH496
Module Title	Digital Technologies in Drawing and Modelling
Level	4
Credit value	10
Faculty	Faculty of Art, Computing and Engineering
HECoS Code	100372
Cost Code	GABE

Programmes in which module to be offered

Programme title	Is the module core or option for this programme
HNC Construction Technology	Core
BSc(Hons) Architectural Design Technology	Core
BSc(Hons) Building Surveying Degree Apprenticeship	Core
BSc(Hons) Building Surveying	Core
BEng(Hons) Civil Engineering Degree Apprenticeship	Option
BSc(Hons) Construction Management Degree Apprenticeship	Core
BSc(Hons) Construction Management	Core
BSc(Hons) Quantity Surveying Degree Apprenticeship	Core
BSc(Hons) Quantity Surveying	Core

Pre-requisites

There are no pre-requisites for this module.

Breakdown of module hours

Learning and teaching hours	4 hrs
Placement tutor support	0 hrs
Supervised learning e.g. practical classes, workshops	14 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
Total active learning and teaching hours	18 hrs
Placement / work based learning	0 hrs
Guided independent study	82 hrs
Module duration (total hours)	100 hrs

For office use only	
Initial approval date	3 rd July 2024
With effect from date	September 2024
Date and details of revision	
Version number	1

Module aims

The principal aim of 'Digital Technologies in Drawing and Modelling' is to provide students with an understanding of the application of specialist software used in the design and development of buildings and infrastructure, and to enable students to develop appropriate skills in drawing, modelling and manipulating digital information by importing, rationalising and detailing technical aspects of building and infrastructure projects.

The module also aims to demonstrate the importance of effective digital information management in the design, construction, use, maintenance and decommissioning of building and civil engineering projects, and its fundamental purpose in communicating accurate technical information within such a multi-disciplinary industrial environment.

Module Learning Outcomes - at the end of this module, students will be able to:

1	Differentiate digital technologies in the design, construction and management of buildings and/or infrastructure that effectively capture, import, manipulate and communicate information in the form of digital drawings and models.
2	Effectively capture, import, manipulate and communicate information in the form of digital drawings and models in response to given building and/or civil engineering project briefs.

Assessment

Indicative Assessment Tasks:

This section outlines the type of assessment tasks the student will be expected to complete as part of the module. More details will be made available in the relevant academic year module handbook.

'Digital Technologies in Drawing and Modelling' will be assessed through a series of practical computer-based tasks which will combine in aggregate to arrive at the recommended final assessment mark for the subject. Practical tasks will require the production of a range of 2-dimensional and 3-dimensional digital outputs that demonstrate knowledge, understanding and skill in the use of specialist software associated with the design and construction of buildings and/or infrastructure projects.

Drawing and modelling tasks will be incremental in their complexity, to accommodate the potential difficulties that might be encountered in students becoming familiar with the modus operandi of particular industry-standard software applications, and therefore it is essential that close tutorial support is provided, particularly during the early stages of delivery.

It is also important that assessment is closely supervised and controlled within the on-site Cad-lab environment, and so time-controlled practical assessments during class sessions are recommended to ensure originality and authenticity in the development and production of drawings and models.

In considering the recommendations suggested above, the module tutor should differentiate the pace at which individual students develop proficiency in the use of software, and so the duration of individual assessment tasks need not be uniform across the cohort, but should reflect the pace at which individual students develop their competencies; naturally those that develop skills quickly, are more likely to produce a greater volume of evidence in response to the practical tasks that comprise the assessment in aggregate.

The number and weighting of practical tasks is at the discretion of the module tutor, but the incremental complexity described should inform an incremental approach to the weighting of individual assessment tasks.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1 & 2	Practical	100

Derogations

There are no derogations associated with this module.

Learning and Teaching Strategies

'Digital Technologies in Drawing and Modelling' should be delivered in a computer laboratory or 'design-office' environment that allows appropriate software to be used effectively on hardware of sufficient capacity to ensure speed and effectiveness in the manipulation of large data sets and complex software applications. Delivery will incorporate the principles of the University's Active Learning Framework (ALF), so that learning opportunities are both synchronous and asynchronous, and are supported by an accessible range of material resources.

Whilst some didactic delivery will help introduce and instruct upon discrete aspects of software application and use, the module should be overtly 'hands-on' for students, and so delivery should accommodate a significant proportion of small group or individual tutorial-based support, so that students learn 'by doing'. If it becomes evident that difficulties are being encountered by a larger proportion of the class, then of course it might be beneficial to revert to a didactic approach on an ad-hoc basis as required.

Because individual learning might well be progressing at a variety of pace, the module tutor should manage differentiation carefully within the student cohort, to ensure that those who are progressing well are kept sufficiently challenged in the continuation of their work.

Finally, it is fundamentally important that the specialist software that individual students are engaged with is appropriate to the title of the degree on which they are enrolled. Whilst introductory sessions are appropriate in the use of specialist software applications generally, there are often significant differences between 'building' and 'civil engineering' software applications. It is therefore essential that the module tutor is aware of the sub-division of specialisms within the student group and predominantly employs software that is most appropriate to an individual student's own building or civil engineering professional discipline.

Indicative Syllabus Outline

Digital technologies in the design, construction and management of buildings and infrastructure:

- Digitisation in the design, construction and management of buildings and infrastructure



- Communicating digital information and data to clients, colleagues and stakeholders
- Digital drawing standards, conventions and good practice
- The importation of digital landscape data from surveying software applications and Ordnance Survey platforms
- The importation of digital component models and associated attributes from product manufacturers
- Analysis of digital models and the extraction of attributes and associated data
- Visualisation of external and internal environments using 3-dimensional Virtual Reality and immersive technologies
- The use of 'industry standard' drawing and modelling software

Indicative Bibliography:

Please note the essential reads and other indicative reading are subject to annual review and update.

Essential Reads

Moss, E. (2023), *Autodesk Revit 2024 Architecture Basics: From the Ground Up*. Mission(Kansas): SDC Publications.

ASCENT (2023), *Autodesk Civil 3D 2024 Fundamentals*. Mission(Kansas): SDC Publications.

Other sources:

Autodesk: <https://www.autodesk.co.uk/>

Bentley: <https://www.bentley.com/>

Digimap: <https://digimap.edina.ac.uk/>

Chartered Institute of Architectural Technologists: www.ciat.org.uk

Royal Institute of British Architects www.architecture.com

Institution of Civil Engineers www.ice.org.uk

Chartered Institute of Building www.ciob.org.uk

Ordnance Survey www.ordnancesurvey.co.uk/

Royal Institution of Chartered Surveyors www.rics.org

Designing Buildings Wiki www.designingbuildings.co.uk

Institution of Structural Engineers www.istructe.org.uk

IHS Database www.ihsti.com