Module Definition Form (MDF)

Module code: MOD009367	**Version:** 1 **Date Amended:** 30/Jun/2023

1. Module Title
Building Information Modelling for Civil Engineering

2a. Module Leader
Nam Bui

2b. School
School of Engineering and the Built Environment

2c. Faculty
Faculty of Science and Engineering

3a. Level
4

3b. Module Type
Standard (fine graded)

4a. Credits
15

4b. Study Hours
150

5. Restrictions

Type	Module Code	Module Name	Condition
Pre-requisites:	None		
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:	None		

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

This module covers the fundamentals of hand sketching, the creation of 2D drawings using Computer Aided Design (CAD), and the use of Building Information Modelling (BIM) in civil engineering. By developing a strong foundation in design aspects and the creation of drawings, students will be better equipped to undertake later modules where design aspects and technical drawings are required.

Upon completion of this module, students will have the skills and competencies necessary to apply BIM software to real-world scenarios such as designing and creating drawings for building structures, and other infrastructure projects. The knowledge and skills from this module are essential for other modules where design aspects account for significant weightings.

The module provides the up-to-date BIM standards and best practices for civil engineering, which are essential skills for employability in the civil engineering industry.

6b. Outline Content

I. Knowledge and Understanding

- Introduction to Building Information Modelling (BIM)
    - Definition and importance of BIM in civil engineering
    - Overview of BIM software and tools
- Hand Sketching
    - Principles of sketching
    - Techniques for producing accurate and detailed sketches
    - Application of sketching in civil engineering design
- Computer Aided Design (CAD)
    - Overview of CAD software and tools
    - Techniques for creating 2D drawings using CAD
    - Application of CAD in civil engineering design
- Building Information Modelling (BIM)
    - Overview of BIM software and tools
    - Techniques for producing 3D models using BIM
    - Performing clash detection and managing project data in BIM
    - Understanding BIM standards and best practices for civil engineering
- Real-World Applications of BIM in Civil Engineering
    - Designing and creating drawings for building structures, and other infrastructure projects using BIM
    - Using BIM for collaboration and communication in the design process

II. Skills Analysis

- Hand Sketching
    - Producing accurate and detailed sketches for civil engineering design
- Computer Aided Design (CAD)
    - Creating 2D drawings using CAD for civil engineering design
- Building Information Modelling (BIM)
    - Producing 3D models using BIM for civil engineering design
    - Performing clash detection and managing project data in BIM
    - Applying BIM standards and best practices for civil engineering
- Employability Skills
    - Understanding the importance of BIM in the civil engineering industry
    - Developing employability skills related to BIM and civil engineering

6c. Key Texts/Literature
The reading list to support this module is available at: https://readinglists.aru.ac.uk/

6d. Specialist Learning Resources
Computer lab Classroom suitable for sketching activities Autodesk Revit, AutoCAD

7. Learning Outcomes (threshold standards)

No.	Type	On successful completion of this module the student will be expected to be able to:
1	Knowledge and Understanding	Demonstrate a comprehensive understanding of Building Information Modelling (BIM) software and tools, including their applications in civil engineering design and best practices for managing project data.
2	Knowledge and Understanding	Suggest a holistic and proportionate approach to the mitigation of security risks associated civil engineering projects including security threats, data loss, and information misuse.
3	Intellectual, practical, affective and transferrable skills	Create accurate and detailed sketches, 2D and 3D drawings for civil engineering projects
4	Intellectual, practical, affective and transferrable skills	Communicate effectively using technical sketches and drawings

8a. Module Occurrence to which this MDF Refers

Year	Occurrence	Period	Location	Mode of Delivery
2024/5	ZZF	Template For Face To Face Learning Delivery		Face to Face

8b. Learning Activities for the above Module Occurrence			
Learning Activities	**Hours**	**Learning Outcomes**	**Details of Duration, frequency and other comments**
Lectures	6	1-2	2 lectures x 3 hours
Other teacher managed learning	30	3-4	10 tutorial sessions x 3 hours
Student managed learning	114	1-4	Background reading, online LinkedIN Learning, preparation for lectures and tutorial sessions, and completion of assessments
TOTAL:	150		

9. Assessment for the above Module Occurrence					
Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
010	Coursework	1-2	25 (%)	Fine Grade	30 (%)
1000-word equivalent report					
Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
011	Coursework	3-4	75 (%)	Fine Grade	30 (%)
Individual submission of sketch, 2D drawing, and 3D drawing. This element is aligned with the C10 Engineering Council's AHEP4 Learning Outcome					

In order to pass this module, students are required to achieve an overall mark of 40% (for modules at levels 3, 4, 5 and 6) or 50% (for modules at level 7*).

In addition, students are required to:
(a) achieve the qualifying mark for each element of fine graded assessment as specified above
(b) pass any pass/fail elements

[* the pass mark of 50% applies for all module occurrences from the academic year 2024/25 – see Section 3a of this MDF to check the level of the module and Section 8a of this MDF to check the academic year]