

Module Details	
Module Title	Building Information Modelling
Module Code	CSE7018-B
Academic Year	2023/4
Credits	20
School	Department of Civil and Structural Engineering
FHEQ Level	FHEQ Level 7

Contact Hours	
Type	Hours
Directed Study	160
Seminars	10
Lectures	30

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 2

Module Aims
<p>Building Information Modelling has become a prominent topic in civil engineering in recent years. This approach to managing and sharing information has been shown to improve the sustainability, safety and overall efficiency of civil engineering projects throughout their lifecycle. Since 2016, all publicly procured construction projects in the UK are required to implement BIM, with similar mandates being established in other countries. Therefore it is crucial for all civil engineers to understand this method of managing the information that they work with. The aim of this module is to provide students with a deep and practical understanding of Building Information Modelling (BIM) in the context of Civil and Structural Engineering. Through learning about the key drivers that resulted in the emergence of BIM as well as the main national and international standards that have been developed to describe the UK BIM Framework including ISO EN 19650-1:2018, students will be equipped to take leading and pragmatic roles on projects in embracing this new way of working. There exists a significant knowledge and skills gap in the industry, which students of this module will be able to provide a meaningful role in closing through reverse-mentoring of more senior staff when they enter the workplace.</p>

Outline Syllabus

A proposed course structure is as follows:

Weeks 1-2: The What, Why and How of BIM in the UK Infrastructure Sector. An overview of the strategic context of BIM, its main principles and how it supports the wider digital transformation of Civil Engineering as taught in other modules. An overview of the UK BIM Framework and its development.

Weeks 3-4: Real world experience of BIM; how BIM has been used on real projects and organisations. Guest lecturers will be invited to enrich the learning

Weeks 5-6: Core BIM processes and concepts. Identify and communicate Information Requirements as well as describe the concepts and principles of organising and digitising information such that it can be shared between organisations

Weeks 7-8: BIM Technologies. An overview of the technological aspects of BIM and the software that is commonly used in industry. An appreciation of the different dimensions commonly referred to with BIM.

Weeks 9-10: Wider issues relating to BIM. The legal, health and safety, security and contractual requirements and implications of using BIM on real-world Civil Engineering projects. How tools such as the BIM Protocol and standards like BS1192-4 and PAS 1192-6 support the use of BIM and the delivery of its intended benefits.

Learning Outcomes

Outcome Number	Description
1	Critically appraise the strategic context of BIM, it's main principles and how it supports the wider digital transformation of Civil Engineering.
2	Relate the theoretical benefits of BIM to real projects and organisations.
3	Identify and communicate Information Requirements as well as describe the concepts and principles of organising and digitising information such that it can be shared between organisations.
4	Analyse the main technologies involved with BIM and evaluate the roles that they play in delivering engineering projects.
5	Critically evaluate the legal, health and safety, security and contractual requirements and implications of using BIM on real-world Civil Engineering projects.

Learning, Teaching and Assessment Strategy

The teaching strategy has been designed, embedding the strategic aims of the Universities Learning, Teaching and Student Experience Strategy (LTSES). The teaching and learning methods have been selected to engage students in developing their fundamental knowledge and understanding through both formal learning opportunities (lectures, seminars) and informal and social learning (group discussions).

Different types of formative and summative assessment will be used, so that students develop a range of transferrable skills in addition to acquiring subject knowledge.

The teaching will be delivered across 10 weeks with two 90-minute lectures each week to deliver the main course material and 1-hour discussion seminars to enrich and consolidate the students' learning. This will include two external presentations. Students will use the directed study time to familiarize themselves with the lecture material and recommended reading in preparation for the seminars and the completion of their assessments.

Two formative assignments to help consolidate and enrich the students' learning

? Prepare a 10-minute presentation to give to some colleagues who favour a more traditional approach to project delivery to set out what BIM is, why it is recommended, how they should implement it and what benefits they should expect to see. This will prepare students to be able to demonstrate LO1 and LO2 in the summative assessment. Feedback will be provided by the tutor and by peers

? Produce a set of simple model-based deliverables by creating a 3D model in a chosen software package and demonstrating information exchange processes through creating a drawing, 4D simulation and a data export. Submit a video of maximum 5 minutes in length to describe the processes being undertaken. This assignment will support the achievement of learning outcomes LO3 and LO4. Feedback to this assignment will be provided by email

Mode of Assessment

Type	Method	Description	Weighting
Summative	Coursework - Written	Critically appraisal of existing reports on the Construction Industry.	30%
Summative	Coursework - Written	Prepare a concise BIM Execution Plan and video demonstrating the creation of a relevant model-based deliverable	45%
Summative	Presentation	Working in pairs, present a compelling case for the use of BIM on a hypothetical project.	25%

Reading List

To access the reading list for this module, please visit <https://bradford.rl.talis.com/index.html>

Please note:

This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.