School of Architecture and Built Environment

ARBE3308: Building Information Modelling (BIM)

Callaghan and Online
Semester 1 - 2024

COURSE OUTLINE

OVERVIEW

Course Description

This subject examines the practical application of Building Information Modelling (BIM) technologies and processes for the development and delivery of construction projects. The role of the project manager, contractor, design team and BIM Manager in the development and use of building information models is explored. This includes the effective management and control of information contained in discipline-specific 3D models. Students develop an in-depth understanding of BIM uses and BIM implementation. The subject also examines the issues and problems that are inhibiting the widespread application of BIM in the industry. Students are presented with the future development of BIM.

Academic Progress Requirements

Nil

Contact Hours

Callaghan
Lectorial
Face to Face On Campus
3 hour(s) per week(s) for 13 week(s) starting Week 1

Online
Lectorial
Online
3 hour(s) per week(s) for 13 week(s) starting Week 1
Online students will receive equivalent instruction through online or other distance education strategies.

Unit Weighting Workload

10
Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.

CONTACTS

Course Coordinator

Callaghan and Online
Dr Fredelino Lijauco
Fredelino.Lijauco@newcastle.edu.au
Consultation: By email or appointment

Teaching Staff

Other teaching staff will be advised on the course Canvas site.

School Office

School of Architecture and Built Environment
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Callaghan
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SYLLABUS

Course Content

- Principles of BIM
- Project delivery process and BIM
- BIM for different project stakeholders
- BIM return on investment
- BIM implementation - dimensions, levels of development, maturity levels, BIM tools, workforce development, BIM execution plan, role of the BIM manager
- BIM team
- BIM-based collaboration
- Legal aspects and risk management
- BIM mandates and mandate instruments
- BIM adoption - barriers, challenges, and initiatives

Course Learning Outcomes

On successful completion of this course, students will be able to:
1. Identify and categorise the principles of Building Information Modelling

2. Recognise the role of a BIM Manager relative to other construction stakeholders

3. Prepare a BIM implementation/execution plan

4. Apply BIM software tools to simulate the processes of design and construction

Course Materials

SCHEDULE

Week	Week Begins	Topic	Learning Activity	Assessment Due
1	26 Feb	Introduction and BIM Principles	Presentation and discussion	
2	4 Mar	BIM for Designers, Owners, and Operators	Presentation and discussion	
3	11 Mar	BIM for Construction	Presentation and discussion	
4	18 Mar	BIM Implementation I	Presentation and discussion	
5	25 Mar	BIM Implementation II	Presentation and discussion	
6	1 Apr	BIM Implementation III	Presentation and discussion	
7	8 Apr	BIM Team	Presentation and discussion	Assignment 1 Due Friday 12 April 2024 (BIM Principles Report)

Mid-Semester Recess				
Mid-Semester Recess				
8	29 Apr	BIM Collaboration	Presentation and discussion	
9	6 May	BIM - Regulatory Aspects	Presentation and discussion	Assignment 2 Due Friday 10 May 2024 (BIM Implementation Plan)
10	13 May	BIM - International Perspective	Presentation and discussion	
11	20 May	Future of BIM I	Presentation and discussion	
12	27 May	Future of BIM II	Presentation and discussion	Assignment 3 Due Friday 31 May 2024 (BIM Business Case)
13	3 Jun	Course Review	Presentation and discussion	
Examination Period				
Examination Period				

ASSESSMENTS

This course has 3 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	BIM Principles Report	Friday 12 April 2024, 11:59PM	Group	20%	1, 2
2	BIM Implementation Plan	Friday 10 May 2024, 11:59PM	Individual	40%	1, 2, 3
3	BIM Business Case	Friday 31 May 2024, 11:59PM	Individual	40%	1, 2, 4

Late Submissions The mark for an assessment item submitted after the designated time on the due date, without an approved extension of time, will be reduced by 10% of the possible maximum mark for that assessment item for each day or part day that the assessment item is late. Note: this applies equally to week and weekend days.

Assessment 1 - BIM Principles Report

Assessment Type Written Assignment

Purpose This is a joint report on the critical principles of BIM.

On completion of this assignment the student should be able to:

- Understand the principles of Building Information Modelling (BIM).
- Correctly apply knowledge of BIM technology and software.
- Designate BIM roles and responsibilities to different stakeholders in the construction industry.

Description The task is to prepare a short BIM presentation (pdf containing a two-page summary, slides, and references) for a construction site induction meeting.

Students will work in groups of two (one student will represent the design team and the other will represent the construction team).

Refer to detailed assignment briefing document on Canvas for further details.

Weighting 20%

Length 1000 words excl. references and appendices

Due Date Friday 12 April 2024, 11:59PM

Submission Method Online

Assessment Criteria Refer to marking rubric

Return Method Not Returned

Feedback Provided Online - Generally within 3 weeks of submission.

Assessment 2 - BIM Implementation Plan

Assessment Type Proposal / Plan

Purpose This is a professional document that maps out the strategy for BIM implementation on a project.

On completion of this assignment the student should be able to:
- Understand BIM implementation processes and implications for practice.
- Assign information management principles within BIM for a construction project.
- Create a BIM collaboration and project management execution/implementation strategy.

Description This written assessment places you in a role of a Building Information Modelling (BIM) manager on a construction project. Your role is to prepare the BIM implementation plan document to distribute to project team members. This means that this plan must be tailored to the nature of the construction project team.

Refer to detailed assignment briefing document on Canvas for further details.

Weighting 40%
Length 2000 words excl. references and appendices
Due Date Friday 10 May 2024, 11:59PM
Submission Method Online
Assessment Criteria Refer to marking rubric
Return Method Online
Feedback Provided Online - Generally within 3 weeks of submission.

Assessment 3 - BIM Business Case

Assessment Type Proposal / Plan

Purpose This is a short and snappy business case pitch outlining the benefits of running a project through BIM.

On completion of this assignment the student should be able to:
- Understand the implications of BIM implementation and the common problems and barriers for construction project stakeholders.
- Present written and visual concepts and ideas about BIM into a business case report to a potential client.

Description This written assessment item requires the student to prepare business case documentation to match a scenario that will be fully outlined in a separate document on Canvas. As the BIM manager of a major construction company in Australia, you must present a business case to convince the board of directors to adopt BIM on an upcoming project.

Weighting 40%
Length 2000 words excl. references and appendices
Due Date Friday 31 May 2024, 11:59PM
Submission Method Online
Assessment Criteria Refer to marking rubric
Return Method Online
Feedback Provided Online - Generally within 3 weeks of submission.

ADDITIONAL INFORMATION

Grading Scheme

This course is graded as follows:

Range of Marks	Grade	Description
85-100	High Distinction (HD)	Outstanding standard indicating comprehensive knowledge and understanding of the relevant materials; demonstration of an outstanding level of academic achievement; mastery of skills*; and achievement of all assessment objectives.
75-84	Distinction (D)	Excellent standard indicating a very high level of knowledge and understanding of the relevant materials; demonstration of a very high level of academic ability; sound development of

		skills*; and achievement of all assessment objectives.
65-74	Credit (C)	Good standard indicating a high level of knowledge and understanding of the relevant materials; demonstration of a high level of academic achievement; reasonable development of skills*; and achievement of all learning outcomes.
50-64	Pass (P)	Satisfactory standard indicating an adequate knowledge and understanding of the relevant materials; demonstration of an adequate level of academic achievement; satisfactory development of skills*; and achievement of all learning outcomes.
0-49	Fail (FF)	Failure to satisfactorily achieve learning outcomes. If all compulsory course components are not completed the mark will be zero. A fail grade may also be awarded following disciplinary action.

*Skills are those identified for the purposes of assessment task(s).

Communication Methods

Communication methods used in this course include:

Course Evaluation

Each year feedback is sought from students and other stakeholders about the courses offered in the University for the purposes of identifying areas of excellence and potential improvement.

Oral Interviews (Vivas)

As part of the evaluation process of any assessment item in this course an oral examination (viva) may be conducted. The purpose of the oral examination is to verify the authorship of the material submitted in response to the assessment task. The oral examination will be conducted in accordance with the principles set out in the Oral Examination (viva) Procedure. In cases where the oral examination reveals the assessment item may not be the student's own work the case will be dealt with under the Student Conduct Rule.

Academic Misconduct

All students are required to meet the academic integrity standards of the University. These standards reinforce the importance of integrity and honesty in an academic environment. Academic Integrity policies apply to all students of the University in all modes of study and in all locations. For the Student Academic Integrity Policy, refer to https://policies.newcastle.edu.au/document/view-current.php?id=35.

Adverse Circumstances

The University acknowledges the right of students to seek consideration for the impact of allowable adverse circumstances that may affect their performance in assessment item(s). Applications for special consideration due to adverse circumstances will be made using the online Adverse Circumstances system where:

1. the assessment item is a major assessment item; or
2. the assessment item is a minor assessment item and the Course Co-ordinator has specified in the Course Outline that students may apply the online Adverse Circumstances system;
3. you are requesting a change of placement; or
4. the course has a compulsory attendance requirement.

Before applying you must refer to the Adverse Circumstance Affecting Assessment Items Procedure available at:
https://policies.newcastle.edu.au/document/view-current.php?id=236

Important Policy Information

The Help button in the Canvas Navigation menu contains helpful information for using the Learning Management System. Students should familiarise themselves with the policies and procedures at https://www.newcastle.edu.au/current-students/respect-at-uni/policies-and-procedures that support a safe and respectful environment at the University.

This course outline was approved by the Head of School. No alteration of this course outline is permitted without Head of School approval. If a change is approved, students will be notified and an amended course outline will be provided in the same manner as the original.