UNSW Course Outline

BLDG3013 Digital Construction - 2024

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General Course Information

Course Code : BLDG3013
Year : 2024
Term : Term 2
Teaching Period : T2
Is a multi-term course? : No
Faculty : Faculty of Arts, Design and Architecture
Academic Unit : School of Built Environment
Delivery Mode : Multimodal
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Undergraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

Digital Construction introduces Integrated Project Delivery (IPD), and the use of Building Information Modelling (BIM) as digital platforms for project delivery. You will learn about 3D representation of the built environment using a BIM paradigm. The course discusses the design

process, performance simulation, visualisation, and sustainable building analysis, including concepts of 3D, 4D, 5D, and 7D BIM. In addition, the course covers aspects of visual programming adopted for automating the design and project delivery process in BIM. You will develop modeling skills as well as an understanding of the use of object-based modeling in the construction profession.

Relationship to Other Courses

The skills learnt in this course can be used for other courses such as capstone or theses courses.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Justify the value of Building Information Modelling (BIM) for Integrated Project Delivery in construction project management.
CLO2 : Generate 4D simulations and utilise them for construction planning and control on site
CLO3 : Produce cost estimates using 5D Building Information Modelling (BIM).
CLO4 : Conduct sustainability analysis in 7D Building Information Modelling (BIM) for a proposed building.

Course Learning Outcomes	Assessment Item
CLO1 : Justify the value of Building Information Modelling (BIM) for Integrated Project Delivery in construction project management.	• Online Quizzes • Individual Project • Computer Lab Assignment
CLO2 : Generate 4D simulations and utilise them for construction planning and control on site	• Online Quizzes • Individual Project • Computer Lab Assignment
CLO3 : Produce cost estimates using 5D Building Information Modelling (BIM).	• Online Quizzes • Individual Project • Computer Lab Assignment
CLO4 : Conduct sustainability analysis in 7D Building Information Modelling (BIM) for a proposed building.	• Online Quizzes • Individual Project • Computer Lab Assignment

Learning and Teaching Technologies

Moodle - Learning Management System | Blackboard Collaborate

Learning and Teaching in this course

A blended delivery model is adopted in this course, comprising of: (1) Pre-recorded Lectures; (2) Online and in-person Computer labs; (3) Online learning.

Lectures

Lectures cover the core concepts and applications of BIM in construction. Students are encouraged to read nominated reference materials and any additional materials as they seem appropriate for the course.

Onsite/online Computer Labs

Computer lab tutorials provide an environment for students to have hands-on experiences of applying classroom theories to solve problems. They will enhance students' skills for:

• Understanding problem scenarios clearly

• Applying appropriate techniques/theories to solve problems

• Solving problems systematically

Online Learning

The use of Moodle online learning platform will form a significant part in the delivery strategy.

All course materials, including lecture notes, tutorials, assignments, etc. will be placed on Moodle.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Online Quizzes Assessment Format: Individual	15%	Start Date: 19/06/2024 09:00 AM Due Date: 21/06/2024 11:55 PM
Individual Project Assessment Format: Individual	60%	Start Date: Not Applicable Due Date: 11/08/2024 11:55 PM
Computer Lab Assignment Assessment Format: Individual	25%	Start Date: Not Applicable Due Date: Two weeks after each computer lab tutorial

Assessment Details

Online Quizzes

Assessment Overview

You will be quizzed on your knowledge of course topics. Feedback will be provided in the form of the correct answers.

Course Learning Outcomes

- CLO1 : Justify the value of Building Information Modelling (BIM) for Integrated Project Delivery in construction project management.
- CLO2 : Generate 4D simulations and utilise them for construction planning and control on site
- CLO3 : Produce cost estimates using 5D Building Information Modelling (BIM).
- CLO4 : Conduct sustainability analysis in 7D Building Information Modelling (BIM) for a proposed building.

Detailed Assessment Description

See **Moodle - Assessments hub** for detailed assignment brief.

Assessment information

There are two quizzes in this course.

The information regarding the due date given above are only related to QUIZ 1.

QUIZ 2 will be open between 17th July 9am and 19th July 11:55pm.

Assignment submission Turnitin type

Not Applicable

Individual Project

Assessment Overview

You will create a BIM model for a proposed building that includes construction schedule simulation, cost estimation, and sustainability analysis. You will also justify the building proposal considering its geographic location, topography, time, location microclimate, building's energy consumption and its impact on the climate change. Grading will be done against assessment criteria, accompanied by written feedback.

Course Learning Outcomes

- CLO1 : Justify the value of Building Information Modelling (BIM) for Integrated Project Delivery in construction project management.
- CLO2 : Generate 4D simulations and utilise them for construction planning and control on site

- CLO3 : Produce cost estimates using 5D Building Information Modelling (BIM).
- CLO4 : Conduct sustainability analysis in 7D Building Information Modelling (BIM) for a proposed building.

Assessment information

For this assessment task, you may use AI-based software to research and prepare prior to writing your assessment. You are permitted to use standard editing and referencing functions in word processing software. This is limited to spelling and grammar checking and reference citation generation in the creation of your submission. You must not use any functions that generate or paraphrase or translate passages of text, whether based on your own work or not. Please note that your submission will be passed through an AI-generated text detection tool. If your marker has concerns that your answer contains passages of AI-generated text, you may be asked to explain your work. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

Computer Lab Assignment

Assessment Overview

You will complete exercises in 3D, 4D, 5D and 7D BIM that will form part of an assignment demonstrating technical skills. Grading will be done against assessment criteria, accompanied by written feedback.

Course Learning Outcomes

- CLO1 : Justify the value of Building Information Modelling (BIM) for Integrated Project Delivery in construction project management.
- CLO2 : Generate 4D simulations and utilise them for construction planning and control on site
- CLO3 : Produce cost estimates using 5D Building Information Modelling (BIM).
- CLO4 : Conduct sustainability analysis in 7D Building Information Modelling (BIM) for a proposed building.

Detailed Assessment Description

See **Moodle - Assessments hub** for detailed assignment brief.

Submission notes

Two weeks after each week's tutorial class - see the specific deadlines in Moodle-Assessments hub

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

General Assessment Information

For Assessment 2, you may use AI-based software to research and prepare prior to writing your assessment. You are permitted to use standard editing and referencing functions in word processing software. This is limited to spelling and grammar checking and reference citation generation in the creation of your submission. You must not use any functions that generate or paraphrase or translate passages of text, whether based on your own work or not.
Please note that your submission will be passed through an AI-generated text detection tool. If your marker has concerns that your answer contains passages of AI-generated text, you may be asked to explain your work. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.

Grading Basis

Standard

Requirements to pass course

Students must obtain at least a mark of 50 out of 100 to pass this course.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 27 May - 2 June	Activity	Lecture - watch the recorded lecture on "Introduction to the course" Tutorrial - 3D BIM modelling
Week 2 : 3 June - 9 June	Activity	Lecture - watch the recorded lecture on "Introduction to BIM" Tutorial - 3D BIM modelling
Week 3 : 10 June - 16 June	Activity	Lecture - watch the recorded lecture on "BIM implementation framework" Tutorial - 3D BIM modelling
Week 4 : 17 June - 23 June	Activity	Lecture - watch the recorded lecture on " 4D BIM" Tutorial - 4D BIM modelling
Week 5 : 24 June - 30 June	Activity	Lecture - watch the recorded lecture on " 5D BIM" Tutorial - 5D BIM modelling
	Activity	Lecture - watch the recorded lecture on " 5D BIM" Tutorial - 5D BIM modelling
Week 7 : 8 July - 14 July	Laboratory	Tutorial - 5D BIM modelling
Week 8 : 15 July - 21 July	Activity	Lecture - watch the recorded lecture on "BIM for sustainability analysis" Tutorial - 7D BIM modelling
Week 9 : 22 July - 28 July	Laboratory	Tutorial - 7D BIM modelling
Week 10 : 29 July - 4 August	Laboratory	Tutorial - 7D BIM modelling

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

General Schedule Information

Recorded lectures are provided in Moodle on a weekly basis.

Computer lab tutorials are running both in online and in-person modes. See class time table for more details of the time and location of the tutorials.

Course Resources

Prescribed Resources

The resources are available in Moodle.

Recommended Resources

The resources are available in Moodle.

Additional Costs

NA

Course Evaluation and Development

Student feedback will be gathered informally via questionnaires distributed to students from week 2 via Moodle. In addition, students are very welcome to provide early feedback to the course convenor from week 2 during the lab tutorial hours. Students are also encouraged to request for meeting with the course convenor or send an email to outline their informal feedback. Formal feedback will be gathered through myExperience survey close to week 8.

The feedback gathered through formal and informal methods, explained above, have been found invaluable for improving the course content, teaching method and schedule of this course.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Sara Shir owzhan		2018 - Anita B building	+61 2 9348 0139	Tuesdays morning in office and afternoon in computer lab tutorial classes	No	Yes

Other Useful Information

Academic Information

Due to evolving advice by NSW Health, students must check for updated information regarding online learning for all Arts, Design and Architecture courses this term (via Moodle or course information provided).

Please see: https://www.unsw.edu.au/arts-design-architecture/student-life/resources-support/protocols-guidelines for essential student information relating to:

- UNSW and Faculty policies and procedures;
- Student Support Services;
- Dean's List;
- review of results;
- credit transfer;
- cross-institutional study and exchange;
- examination information;
- enrolment information;
- Special Consideration in the event of illness or misadventure;
- student equity and disability;

And other essential academic information.

Academic Honesty and Plagarism

Plagiarism is using the words or ideas of others and presenting them as your own. It can take many forms, from deliberate cheating to accidentally copying from a source without acknowledgement.

UNSW groups plagiarism into the following categories:

- Copying: Using the same or very similar words to the original text or idea without acknowledging the source or using quotation marks. This includes copying materials, ideas or concepts from a book, article, report or other written document, presentation, composition, artwork, design, drawing, circuitry, computer program or software, website, internet, other electronic resource, or another person's assignment without appropriate acknowledgement.
- Inappropriate paraphrasing: Changing a few words and phrases while mostly retaining the original information, structure and/or progression of ideas of the original without acknowledgement. This also applies in presentations where someone paraphrases another's ideas or words without credit and to piecing together quotes and paraphrases into a new whole, without appropriate referencing.

- Collusion: Working with others but passing off the work as a person's individual work. Collusion also includes providing your work to another student for the purpose of them plagiarising, paying another person to perform an academic task, stealing or acquiring another person's academic work and copying it, offering to complete another person's work or seeking payment for completing academic work.
- Inappropriate citation: Citing sources which have not been read, without acknowledging the "secondary" source from which knowledge of them has been obtained.
- Duplication ("self-plagiarism"): Submitting your own work, in whole or in part, where it has previously been prepared or submitted for another assessment or course at UNSW or another university.

The UNSW Academic Skills support offers resources and individual consultations. Students are also reminded that careful time management is an important part of study. One of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting and proper referencing of sources in preparing all assessment items. UNSW Library has the ELISE tool available to assist you with your study at UNSW. ELISE is designed to introduce new students to studying at UNSW, but it can also be a great refresher during your study.

Completing the ELISE tutorial and quiz will enable you to:

- analyse topics, plan responses and organise research for academic writing and other assessment tasks
- effectively and efficiently find appropriate information sources and evaluate relevance to your needs
- use and manage information effectively to accomplish a specific purpose
- better manage your time
- understand your rights and responsibilities as a student at UNSW
- be aware of plagiarism, copyright, UNSW Student Code of Conduct and Acceptable Use of UNSW ICT Resources Policy
- be aware of the standards of behaviour expected of everyone in the UNSW community
- locate services and information about UNSW and UNSW Library

Use of AI for assessments

As AI applications continue to develop, and technology rapidly progresses around us, we remain committed to our values around academic integrity at UNSW. Where the use of AI tools, such as ChatGPT, has been permitted by your course convener, they must be properly credited and your submissions must be substantially your own work.

In cases where the use of AI has been prohibited, please respect this and be aware that where unauthorised use is detected, penalties will apply.

Use of AI for assessments | UNSW Current Students

Submission of Assessment Tasks

Turnitin Submission

If you encounter a problem when attempting to submit your assignment through Turnitin, please telephone External Support on 9385 3331 or email them on externalteltsupport@unsw.edu.au

Support hours are 8:00am – 10:00pm on weekdays and 9:00am – 5:00pm on weekends (365 days a year). If you are unable to submit your assignment due to a fault with Turnitin, you may apply for an extension, but you must retain your ticket number from External Support (along with any other relevant documents) to include as evidence to support your extension application. If you email External Support, you will automatically receive a ticket number, but if you telephone, you will need to specifically ask for one. Turnitin also provides updates on their system status on Twitter.

Generally, assessment tasks must be submitted electronically via either Turnitin or a Moodle assignment. In instances where this is not possible, alternative submission details will be stated on your course's Moodle site. For information on how to submit assignments online via Moodle: https://student.unsw.edu.au/how-submit-assignment-moodle

Late Submission Penalty

UNSW has a standard late submission penalty of:

- 5% per calendar day,
- for all assessments where a penalty applies,
- capped at five calendar days (120 hours) from the assessment deadline, after which a student cannot submit an assessment, and
- no permitted variation.

Students are expected to manage their time to meet deadlines and to request Special Consideration as early as possible before the deadline. Support with Time Management is available here.

School Contact Information

beadmin@unsw.edu.au