



UNSW Course Outline

CONS0016 Construction Risk Management and Business Analytics - 2024

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General Course Information

Course Code : CONS0016

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 : Postgraduate

Units of Credit : 6

Useful Links

[Handbook Class Timetable](#)

Course Details & Outcomes

Course Description

Construction Risk Management and Business Analytics explores concepts, key elements and applications of risk management and data-driven risk assessment. The course investigates

standards, best industry practices and business analytics and their application to risk management in real-world situations in engineering and construction projects.

Project risk management is an iterative process and assists organisations in setting strategy, achieving objectives and informing decision-making during the project lifecycle. The course focuses on commercial risks in delivering complex construction projects. You will learn about key risk categories such as work health and safety, environment, quality and other common risks which occur throughout the project lifecycle. You will also learn how to use industry risk assessment tools and business analytics to achieve smarter engineering and construction risk reduction decisions.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Identify complex risks and uncertainties in relation to stakeholders' objectives within the process of risk management.
CLO2 : Apply tools and theoretical frameworks to assess risks and contingencies for construction projects.
CLO3 : Analyse and evaluate complex risks and contingencies applicable to construction projects, including environmental risks.
CLO4 : Explain business analytics in driving smarter engineering and construction decisions.
CLO5 : Justify a research-based project Risk Management Plan, including a critical analysis and a data-driven solution plan.

Course Learning Outcomes	Assessment Item
CLO1 : Identify complex risks and uncertainties in relation to stakeholders' objectives within the process of risk management.	<ul style="list-style-type: none">• Individual Assignment• Online Quiz• Individual Project
CLO2 : Apply tools and theoretical frameworks to assess risks and contingencies for construction projects.	<ul style="list-style-type: none">• Individual Assignment• Individual Project
CLO3 : Analyse and evaluate complex risks and contingencies applicable to construction projects, including environmental risks.	<ul style="list-style-type: none">• Individual Assignment• Individual Project
CLO4 : Explain business analytics in driving smarter engineering and construction decisions.	<ul style="list-style-type: none">• Individual Project
CLO5 : Justify a research-based project Risk Management Plan, including a critical analysis and a data-driven solution plan.	

Learning and Teaching Technologies

Moodle - Learning Management System | Microsoft Teams

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Individual Assignment Assessment Format: Individual	30%	Start Date: 28/05/2024 09:00 PM Due Date: 06/07/2024 11:55 PM
Online Quiz Assessment Format: Individual	20%	Start Date: 14/06/2024 12:00 AM Due Date: 22/06/2024 11:55 PM
Individual Project Assessment Format: Individual	50%	Start Date: 09/07/2024 09:00 PM Due Date: 10/08/2024 11:55 PM

Assessment Details

Individual Assignment

Assessment Overview

You will develop a project risk register for a selected scenario. Grading will be done against assessment criteria, accompanied by written feedback.

Course Learning Outcomes

- CLO1 : Identify complex risks and uncertainties in relation to stakeholders' objectives within the process of risk management.
- CLO2 : Apply tools and theoretical frameworks to assess risks and contingencies for construction projects.
- CLO3 : Analyse and evaluate complex risks and contingencies applicable to construction projects, including environmental risks.

Detailed Assessment Description

Further details provided in the Assessment brief.

Assessment Length

2000 - 2500 words

Assignment submission Turnitin type

This is not a Turnitin assignment

Online Quiz

Assessment Overview

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

Course Learning Outcomes

- CLO1 : Identify complex risks and uncertainties in relation to stakeholders' objectives within the process of risk management.

Detailed Assessment Description

Further details provided in the Assessment brief.

Assignment submission Turnitin type

Not Applicable

Individual Project

Assessment Overview

You will produce a Risk Management Plan (RMP) for a selected case study. Grading will be done against assessment criteria, accompanied by written feedback.

Course Learning Outcomes

- CLO1 : Identify complex risks and uncertainties in relation to stakeholders' objectives within the process of risk management.
- CLO2 : Apply tools and theoretical frameworks to assess risks and contingencies for construction projects.
- CLO3 : Analyse and evaluate complex risks and contingencies applicable to construction projects, including environmental risks.
- CLO4 : Explain business analytics in driving smarter engineering and construction decisions.

Detailed Assessment Description

Further details provided in the Assessment brief.

Assessment Length

5000 words

Assignment submission Turnitin type

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

General Assessment Information

Use of Artificial Intelligence (AI) – such as ChatGPT – in UNSW Assessments*

The following levels of generative AI use may be applied to assessments (**NB: The specific permitted level of AI use will be specified in the Assessment brief.**)

- 1. NO ASSISTANCE:** It is prohibited to use any software or service to search for or generate information or answers. If its use is detected, it will be regarded as serious academic misconduct and subject to the standard penalties, which may include 00FL, suspension and exclusion.
- 2. SIMPLE EDITING ASSISTANCE:** For this assessment task, you may use standard editing and referencing software, but not generative AI. You are permitted to use the full capabilities of the standard software to answer the question (e.g. Microsoft Office suite, Grammarly, etc.). If the use of generative AI such as ChatGPT is detected, it will be regarded as serious academic misconduct and subject to the standard penalties, which may include 00FL, suspension and exclusion.
- 3. PLANNING ASSISTANCE:** As this assessment task involves some planning or creative processes, you are permitted to use software to generate initial ideas. However, you must develop or edit those ideas to such a significant extent that what is submitted is your own work, i.e. only occasional AI generated words or phrases may form part of your final submission. It is a good idea to keep copies of the initial prompts to show your lecturer if there is any uncertainty about the originality of your work. If the outputs of generative AI such as ChatGPT form a part of your submission, it will be regarded as serious academic misconduct and subject to the standard penalties, which may include 00FL, suspension and exclusion.
- 4. FULL ASSISTANCE WITH ATTRIBUTION:** You can use generative AI software in this assessment to the extent specified in the assessment instructions. Any output of generative software within your assessment must be attributed with full referencing. If the outputs of generative AI such as ChatGPT form part of your submission and is not appropriately attributed, it will be regarded as serious academic misconduct and subject to the standard penalties, which may include 00FL, suspension and exclusion.

* To cite: OpenAI (Year Accessed). ChatGPT. OpenAI. <https://openai.com/models/chatgpt/>

* Please note that the outputs from these tools are not always accurate, appropriate, nor properly referenced. You should ensure that you have moderated and critically evaluated the outputs from generative AI tools such as ChatGPT before submission.

Submission of Assessment Tasks

All assessment tasks must be submitted via either Turnitin or a Moodle assignment. In instances where this is not possible, it will be stated on your course's Moodle site with alternative submission details.

You are advised to submit well before the deadline to avoid unanticipated submission errors. Always retain a copy of work submitted, and keep all drafts, original data and other evidence of the authenticity of your work for at least one year after assessment. If an assessment is mislaid you are responsible for providing a further copy.

For information on how to submit assignments online via Moodle:

<https://student.unsw.edu.au/howsubmit-assignment-moodle>

Feedback is an indispensable part of assessment. All assessment tasks include written provided feedback. In addition to the feedback strategy for assessment tasks, students will be encouraged to ask questions during lectures and tutorials and the lecturer will be available for questions directly after class.

Feedback Mechanism

1. Assessment 1

Mechanism: Written feedback in Moodle and group discussion in class/tutorials

Delivery date: Within 12 working days of submission as per UNSW Assessment Procedure

2. Assessment 2

Mechanism: Written feedback in Moodle and group discussion in class/tutorials

Delivery date: Within 12 working days of submission as per UNSW Assessment Procedure

3. Assessment 3

Feedback mechanism: Written feedback in Moodle

Delivery date: Within 15 working days of submission as per UNSW Assessment Procedure

Grading Basis

Standard

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 0 : 20 May - 26 May	Other	Introductory activity • Welcome students • Course introduction
Week 1 : 27 May - 2 June	Lecture	• Introduction to the Risk Management Process • Risk Management Standards and Guides • Construction Project Risk Management • Tutorial
Week 2 : 3 June - 9 June	Lecture	• Corporate Financial Health • Financial Statement Analysis • Weighted Average Cost of Capital • Tutorial
Week 3 : 10 June - 16 June	Lecture	• Macro Risk Management by Corporations • Tutorial
Week 4 : 17 June - 23 June	Lecture	• Construction Risk Management Risk identification on construction sites – an example of the excavation process • Tutorial
Week 5 : 24 June - 30 June	Lecture	• Construction Risk Management Construction Risk Evaluation - an example • Tutorial
Week 6 : 1 July - 7 July	Lecture	• Case studies and future trends in construction risk management • Risk Management Plan and RACI • Tutorial
Week 7 : 8 July - 14 July	Lecture	• Contingency Management Determination Allocation Controls • Tutorial
Week 8 : 15 July - 21 July	Lecture	• Quantitative Risk Analysis (QRA) - I Process Overview Development and Validation of Analysis Model for Inherent and Contingent Risks Probability Distributions, Correlations, and Simulations • Tutorial
Week 9 : 22 July - 28 July	Lecture	• Quantitative Risk Analysis (QRA) - II Cost Risk Analysis (QCRA) by using First Principles Risk Analysis (FPRA) Schedule Risk Analysis (QSRA) • Tutorial
Week 10 : 29 July - 4 August	Lecture	• Review of Weeks 1 – 10 Activity • The Future of Construction Risk Management and Business Analytics • Tutorial
Week 11 : 5 August - 11 August	Assessment	• Assessment 3 due date: 10 August 2024.

Attendance Requirements

You are expected to be regular and punctual in attendance at all classes for the School of Built Environment courses in which you are enrolled. If and where individual courses have specific attendance requirements, these will be stated in the course outline.

If you do not attend, engage, or participate in scheduled class activities, including lectures, tutorials, studios, labs, etc, you run the risk of failing a course.

If illness or unexpected and beyond your control circumstances prevent you from completing a task on time, or substantially disturb your assessment performance, you should apply for [Special](#)

Consideration, as soon as practicable, accompanied by appropriate documentation.

No special consideration will be provided if you miss out on essential course information and materials, or if you miss assessment tasks and deadlines due to unexplained absences or an unapproved lack of attendance.

You may be advised by the Course Convenor to withdraw from the course if significant learning activities are missed.

Course Resources

Prescribed Resources

- ISO 31000:2018
- ISO 31010:2019
- Risk Engineering Society (RES) Contingency Guideline, 2nd Edition, 2019

Recommended Resources

- Project Management Institute (PMI) Risk Management Standard
- Project Management Institute (PMI) Schedule Management Standard
- AACEi, Recommended Practices
 - No. 71R-12, Required Skills and Knowledge of Decision and Risk Management
 - No. 85R-14, Use of Decision Trees in Decision Making
 - No. 41R-08, Risk Analysis and Contingency Determination using Range Estimating
 - No. 42R-08, Risk Analysis and Contingency Determination using Parametric Estimating
 - No. 43R-08, Risk Analysis and Contingency Determination using Expected Value
 - No. 57R-09, Integrated Cost and Schedule Risk Analysis using Monte Carlo Simulation of a CPM Model
 - No. 62R-11, Risk Assessment: Identification and Qualitative Analysis
 - No. 63R-11, Risk Treatment
 - No. 64R-11, CPM Schedule Risk Modelling and Analysis: Special Considerations
 - No. 66R-11, Selecting Probability Distribution Functions for use in Cost and Schedule Risk Simulation Models
 - No. 71R-12, Required Skills and Knowledge of Decision and Risk Management
 - No. 72R-12, Developing a Project Risk Management Plan
- Edwards, P J and Bowen, P A (2005) Risk management in project organisations, UNSW Press,
- Uher, T and Loosemore, M (2004) Essentials of project management, UNSW Press.

Course Evaluation and Development

We encourage and support students to maintain regular contact with the course convenor to provide informal feedback throughout the course. For specific issues or detailed feedback, please arrange a meeting with the course convenor via email.

In this course there is an option for students to provide anonymous feedback via the course's Moodle page, which is directly sent to the convenor. As a final step, students are invited to share their insights and experiences by completing the MyExperience survey. The feedback gathered each year is integral to the continuous enhancement and development of the course.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Samuel Frimpong			0415752084	By appointment – organise via email.	No	Yes
Administrator	Samad Mohammad EbrahimzadeSepasgozar		Anita B. Lawrence Building – 3004		By appointment – organise via email.	Yes	No

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 Plagiarism

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

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