



**UNSW**

## UNSW Course Outline

# RISK5002 Risk Analytics - 2024

Published on the 25 Aug 2024

## General Course Information

**Course Code :** RISK5002

**Year :** 2024

**Term :** Term 3

**Teaching Period :** T3

**Is a multi-term course? :** No

**Faculty :** UNSW Business School

**Academic Unit :** School of Risk and Actuarial Studies

**Delivery Mode :** In Person

**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

This course covers risk analytics tools and techniques that individuals and organisations can use to manage a wide range of risks, including strategic, operational, environmental, health and safety, engineering reliability and cyber risks. Based on the ISO 31000 and IEC/ISO 31010 international standards for risk management, this course introduces analytics tools and

techniques to measure, quantify and analyse risks. The course focuses on the application of these tools to risk assessment, which is a key component of the risk management process. Emphasis is placed on the practical applications of these approaches using qualitative, semi-quantitative and quantitative tools and techniques, including Scenario Methods, Risk Maps, Cybersecurity Risk Assessment, Human Reliability Analysis, Environmental Risk Assessment, and approaches to dealing with extremes.

## Course Aims

The aim of this course is to teach individuals and organizations how to effectively manage various types of risks by using risk analytics tools and techniques. The course follows international standards for risk management and introduces methods to measure, quantify, and analyze risks.

## Relationship to Other Courses

The course reviews key concepts of statistics and looks at a number of data sources used to analyse risks in various disciplines. Applications such as forecasting, modelling extreme events and dependencies are illustrated through their implementation in a number of practical problems. These are aimed at making students aware of the power of statistics in quantitative risk analysis, and its areas of applicability. Traditional risk measures and models routinely used to analyse financial, insurance, environmental, health and safety, engineering reliability and security risks data are reviewed. Emphasis is placed on the use of these tools in practical applications, which is achieved through the presentation of real-life examples. Simulation is discussed as a tool to analyse risks in complex systems, where data is not available.

RISK5002 is one of the Specialisation Core Courses in the Risk Management specialisation of the MCom and MCom(Extn). It is also a recommended elective in the Master of Actuarial Studies.

The prerequisite for RISK5002 is enrolment in program 8404 or 8417 or 8411 or 8416.

This course is closely related to RISK5001. RISK5001 introduces the broad concept of risk affecting an organisation and the organisational structures needed to deal with various risks. RISK5002 focuses on tools and techniques to measure, quantify and analyse risks.

# Course Learning Outcomes

Course Learning Outcomes
CLO1 : Understand the main types of risks faced by financial institutions and banks, and realise that many of the ideas and approaches are equally applicable to non-financial corporations
CLO2 : Develop an understanding of the need for quantification and practical issues in quantifying risks relevant for the operating environment of the corporation
CLO3 : Locate and evaluate the research literature on current developments in risk management strategies, for example stress testing and liquidity risks are receiving more attention
CLO4 : Present and discuss simulation based approaches to analyse risks in complex systems

Course Learning Outcomes	Assessment Item
CLO1 : Understand the main types of risks faced by financial institutions and banks, and realise that many of the ideas and approaches are equally applicable to non-financial corporations	<ul style="list-style-type: none"><li>• Tutorial Participation and Discussion</li><li>• Formative Assessment</li><li>• Assignment</li><li>• Exam</li></ul>
CLO2 : Develop an understanding of the need for quantification and practical issues in quantifying risks relevant for the operating environment of the corporation	<ul style="list-style-type: none"><li>• Tutorial Participation and Discussion</li><li>• Formative Assessment</li><li>• Assignment</li><li>• Exam</li></ul>
CLO3 : Locate and evaluate the research literature on current developments in risk management strategies, for example stress testing and liquidity risks are receiving more attention	<ul style="list-style-type: none"><li>• Tutorial Participation and Discussion</li><li>• Formative Assessment</li><li>• Assignment</li><li>• Exam</li></ul>
CLO4 : Present and discuss simulation based approaches to analyse risks in complex systems	<ul style="list-style-type: none"><li>• Tutorial Participation and Discussion</li><li>• Formative Assessment</li><li>• Assignment</li><li>• Exam</li></ul>

## Learning and Teaching Technologies

Moodle - Learning Management System

# Assessments

## Assessment Structure

Assessment Item	Weight	Relevant Dates	Program learning outcomes
Tutorial Participation and Discussion Assessment Format: Individual	5%	Start Date: Weekly Due Date: Weekly	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication
Formative Assessment Assessment Format: Individual Short Extension: Yes (1 day)	25%	Start Date: Weekly Due Date: Weekly	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication
Assignment Assessment Format: Individual Short Extension: Yes (3 days)	30%	Start Date: Week 7 Due Date: Week 10	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication
Exam Assessment Format: Individual	40%	Start Date: TBA Due Date: TBA	

## Assessment Details

### Tutorial Participation and Discussion

#### Assessment Overview

to allow students to review, clarify and further discuss course concepts

#### Course Learning Outcomes

- CLO1 : Understand the main types of risks faced by financial institutions and banks, and realise that many of the ideas and approaches are equally applicable to non-financial corporations
- CLO2 : Develop an understanding of the need for quantification and practical issues in quantifying risks relevant for the operating environment of the corporation
- CLO3 : Locate and evaluate the research literature on current developments in risk management strategies, for example stress testing and liquidity risks are receiving more attention
- CLO4 : Present and discuss simulation based approaches to analyse risks in complex systems

#### Generative AI Permission Level

### No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.

For more information on Generative AI and permitted use please see [here](#).

## Formative Assessment

### Assessment Overview

to help students discuss and practice course concepts

### Course Learning Outcomes

- CLO1 : Understand the main types of risks faced by financial institutions and banks, and realise that many of the ideas and approaches are equally applicable to non-financial corporations
- CLO2 : Develop an understanding of the need for quantification and practical issues in quantifying risks relevant for the operating environment of the corporation
- CLO3 : Locate and evaluate the research literature on current developments in risk management strategies, for example stress testing and liquidity risks are receiving more attention
- CLO4 : Present and discuss simulation based approaches to analyse risks in complex systems

### Generative AI Permission Level

#### No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.

For more information on Generative AI and permitted use please see [here](#).

## Assignment

### Assessment Overview

to allow students to apply course contents and develop their presentation skills

### Course Learning Outcomes

- CLO1 : Understand the main types of risks faced by financial institutions and banks, and realise that many of the ideas and approaches are equally applicable to non-financial corporations
- CLO2 : Develop an understanding of the need for quantification and practical issues in quantifying risks relevant for the operating environment of the corporation
- CLO3 : Locate and evaluate the research literature on current developments in risk management strategies, for example stress testing and liquidity risks are receiving more attention
- CLO4 : Present and discuss simulation based approaches to analyse risks in complex systems

## Generative AI Permission Level

### No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.

For more information on Generative AI and permitted use please see [here](#).

## Exam

### Assessment Overview

to assess students' knowledge of course contents

### Course Learning Outcomes

- CLO1 : Understand the main types of risks faced by financial institutions and banks, and realise that many of the ideas and approaches are equally applicable to non-financial corporations
- CLO2 : Develop an understanding of the need for quantification and practical issues in quantifying risks relevant for the operating environment of the corporation
- CLO3 : Locate and evaluate the research literature on current developments in risk management strategies, for example stress testing and liquidity risks are receiving more attention
- CLO4 : Present and discuss simulation based approaches to analyse risks in complex systems

## Generative AI Permission Level

### No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.

For more information on Generative AI and permitted use please see [here](#).

## General Assessment Information

As a student at UNSW you are expected to display [academic integrity](#) in your work and interactions. Where a student breaches the [UNSW Student Code](#) with respect to academic integrity, the University may take disciplinary action under the Student Misconduct Procedure. To assure academic integrity, you may be required to demonstrate reasoning, research and the process of constructing work submitted for assessment.

To assist you in understanding what academic integrity means, and how to ensure that you do comply with the UNSW Student Code, it is strongly recommended that you complete the [Working with Academic Integrity](#) module before submitting your first assessment task. It is a free, online self-paced Moodle module that should take about one hour to complete.

### Grading Basis

Standard

### Requirements to pass course

In order to pass this course, you must:

- achieve a composite mark of at least 50 out of 100;
- meet any additional requirements described in the Assessment Summary section.

You are expected to attempt all assessment requirements in the course.

## Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 9 September - 15 September	Topic	Risk Assessment (Part 1)
Week 2 : 16 September - 22 September	Topic	Risk Assessment (Part 2)
Week 3 : 23 September - 29 September	Topic	Risk Matrices and Risk Maps
Week 4 : 30 September - 6 October	Topic	Scenario Methods
Week 5 : 7 October - 13 October	Topic	Cyber Risk. NOTE LECTURE IN WEEK 5 COINCIDES WITH THE LABOUR DAY PUBLIC HOLIDAY. A VIDEO RECORDING OF THE LECTURE WILL BE MADE AVAILABLE.
Week 6 : 14 October - 20 October	Topic	Revision Week: NO LECTURE, NO TUTORIAL
Week 7 : 21 October - 27 October	Topic	Human reliability analysis
Week 8 : 28 October - 3 November	Topic	Environmental risks
Week 9 : 4 November - 10 November	Topic	Dealing with extremes
Week 10 : 11 November - 17 November	Topic	Risk Intuition, Perception, Outrage; Revision

## Attendance Requirements

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

## General Schedule Information

### Lectures

The purpose of lectures is to provide a logical structure for the topics that make up the course and to emphasise the important or difficult concepts and methods of each topic. The material introduced in lectures is supplemented by designated readings and the tutorial program.

Lectures commence in Week 1.

## Tutorials

Tutorials begin in Week 1 and are an integral part of the course. The tutorial questions and exercises provide a vehicle for discussion of applications and case studies of the concepts and theories introduced in lectures and readings. Students are required to be well prepared to participate in the tutorial discussions by reading the designated readings and attempting the questions and exercises before the tutorial.

# Course Resources

## Prescribed Resources

The website for this course is on [Moodle](#). The website includes: all course handouts; lecture slides; designated readings; the tutorial program and readings for Review Essays. To access the course website online support site for students, follow the links from that website to UNSW Moodle Support/Support for Students. Additional technical support can be obtained from [itservicecentre@unsw.edu.au](mailto:itservicecentre@unsw.edu.au) (02 9385 1333).

It is important that you visit the course website regularly to see any notices and documents posted there, as it will be assumed that they are known to you within a reasonable time.

## Textbook and Readings

There is no prescribed textbook for this course. All materials (e.g., required and recommended readings) are provided on the course website in Moodle.

# Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
	James Basm an					No	Yes

# Other Useful Information

## Academic Information

## COURSE POLICIES AND SUPPORT

The Business School expects that you are familiar with the contents of this course outline and the UNSW and Business School learning expectations, rules, policies and support services as listed below:

- Program Learning Outcomes
- Academic Integrity and Plagiarism
- Student Responsibilities and Conduct
- Special Consideration
- Protocol for Viewing Final Exam Scripts
- Student Learning Support Services

Further information is provided on the [Policies and Guidelines](#) page.

Students may not circulate or post online any course materials such as handouts, exams, syllabi or similar resources from their courses without the written permission of their instructor.

## STUDENT LEARNING OUTCOMES

The Course Learning Outcomes (CLOs) – under the Outcomes tab – are what you should be able to demonstrate by the end of this course, if you participate fully in learning activities and successfully complete the assessment items.

CLOs also contribute to your achievement of the Program Learning Outcomes (PLOs), which are developed across the duration of a program. PLOs are, in turn, directly linked to [UNSW graduate capabilities](#). More information on Coursework PLOs is available on the [Policies and Guidelines](#) page. For PG Research PLOs, including MPDBS, please refer to [UNSW HDR learning outcomes](#).

## Academic Honesty and Plagiarism

As a student at UNSW you are expected to display [academic integrity](#) in your work and interactions. Where a student breaches the [UNSW Code of Conduct](#) with respect to academic integrity, the University may take disciplinary action. To assure academic integrity, you may be required to demonstrate reasoning, research and the process of constructing work submitted for assessment.

To assist you in understanding what academic integrity means, and how to ensure that you do comply with the UNSW Code of Conduct, it is strongly recommended that you complete the [Working with Academic Integrity](#) module before submitting your first assessment task. It is a free, online self-paced Moodle module that should take about one hour to complete.

# **Submission of Assessment Tasks**

## **SHORT EXTENSIONS**

Short Extension is a new process that allows you to apply for an extended deadline on your assessment without the need to provide supporting documentation, offering immediate approval during brief, life-disrupting events. Requests are automatically approved once submitted.

Short extensions are ONLY available for some assessments. Check your course outline or Moodle to see if this is offered for your assessments. Where a short extension exists, all students enrolled in that course in that term are eligible to apply. Further details are available the UNSW [Current Students](#) page.

## **SPECIAL CONSIDERATION**

You can apply for special consideration when illness or other circumstances beyond your control interfere with your performance in a specific assessment task or tasks, including online exams. Special consideration is primarily intended to provide you with an extra opportunity to demonstrate the level of performance of which you are capable.

Applications can only be made online and will NOT be accepted by teaching staff. Applications will be assessed centrally by the Case Review Team, who will update the online application with the outcome and add any relevant comments. The change to the status of the application immediately sends an email to the student and to the assessor with the outcome of the application. The majority of applications will be processed within 3-5 working days.

For further information, and to apply, see Special Consideration on the UNSW [Current Students](#) page.

## **LATE SUBMISSION PENALTIES**

### **LATE SUBMISSION PENALTIES**

For assessments other than examinations, late submission will incur a penalty of 5% per day or part thereof (including weekends) from the due date and time. An assessment will not be accepted after 5 days (120 hours) of the original deadline unless special consideration has been approved. In the case of an approved Equitable Learning Plan (ELP) provision, special consideration or short extension, the late penalty applies from the date of approved time

extension. After five days from the extended deadline, the assessment cannot be submitted.

An assessment is considered late if the requested format, such as hard copy or electronic copy, has not been submitted on time or where the 'wrong' assessment has been submitted.

For assessments which account for 10% or less of the overall course grade, and where answers are immediately discussed or debriefed, the LIC may stipulate a different penalty. Details of such late penalties will be available on the course Moodle page.

## FEEDBACK ON YOUR ASSESSMENT TASK PERFORMANCE

Feedback on student performance from formative and summative assessment tasks will be provided to students in a timely manner. Assessment tasks completed within the teaching period of a course, other than a final assessment, will be assessed and students provided with feedback, with or without a provisional result, within 10 working days of submission, under normal circumstances. Feedback on continuous assessment tasks (e.g. laboratory and studio-based, workplace-based, weekly quizzes) will be provided prior to the midpoint of the course.

## Faculty-specific Information

### PROTOCOL FOR VIEWING FINAL EXAM SCRIPTS

UNSW students have the right to view their final exam scripts, subject to a small number of very specific exemptions. The UNSW Business School has set a [protocol](#) under which students may view their final exam script. Individual schools within the Faculty may also set up additional local processes for viewing final exam scripts, so it is important that you check with your School.

If you are completing courses from the following schools, please note the additional school-specific information:

- Students in the **School of Accounting, Auditing & Taxation** who wish to view their final examination script should also refer to [this page](#).
- Students in the **School of Banking & Finance** should also refer to [this page](#).
- Students in the **School of Information Systems & Technology Management** should also refer to [this page](#).

## COURSE EVALUATION AND DEVELOPMENT

Feedback is regularly sought from students and continual improvements are made based on this feedback. At the end of this course, you will be asked to complete the [myExperience survey](#),

which provides a key source of student evaluative feedback. Your input into this quality enhancement process is extremely valuable in assisting us to meet the needs of our students and provide an effective and enriching learning experience. The results of all surveys are carefully considered and do lead to action towards enhancing educational quality.

## QUALITY ASSURANCE

The Business School is actively monitoring student learning and quality of the student experience in all its programs. A random selection of completed assessment tasks may be used for quality assurance, such as to determine the extent to which program learning goals are being achieved. The information is required for accreditation purposes, and aggregated findings will be used to inform changes aimed at improving the quality of Business School programs. All material used for such processes will be treated as confidential.

## TEACHING TIMES AND LOCATIONS

Please note that teaching times and locations are subject to change. Students are strongly advised to refer to the [Class Timetable website](#) for the most up-to-date teaching times and locations.