



ACST1052

Introduction to Actuarial Studies

Session 1, In person-scheduled-weekday, North Ryde 2025

Department of Actuarial Studies and Business Analytics

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General Information

Unit convenor and teaching staff

Colin Zhang

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Credit points

10

Prerequisites

Admission to BActStud or BActStudBSc or BAppFinBActStud or BActStudBProfPrac or BActStudProfPrac(Hons)

Corequisites

STAT1371

Co-badged status

Unit description

This unit provides an introduction to the important underlying aspects of actuarial work. It looks at the development of actuarial techniques in the context of life insurance, general insurance, superannuation, and investment. The aim is to develop problem-solving and communication skills and give students some of the basic tools for risk management and financial modelling. The unit shows how studies in related disciplines (such as accounting, demography, economics, statistics, computing and mathematics) are essential to the education of an actuary. The unit works through the control cycle approach to insurance: business objectives, product design, risk assessment, modelling of insurance and financial risks (including claim frequency and claim size of individual claims and on a portfolio basis), pricing, reserving, investment and asset liability matching, claims management, legal requirements, solvency, profitability and responding to experience. This unit is relevant for students who want to become actuaries or risk managers. Students are assumed to have studied mathematics in high school up to at least HSC Extension 1 level or equivalent.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

Learning Outcomes

On successful completion of this unit, you will be able to:

ULO1: Comprehend how the actuarial control cycle is used to identify and manage

financial risks.

ULO2: Construct simple cash flow models which can be used for decision making and implement these in Excel or other softwares.

ULO3: Apply demographic data and statistical models to price policies, determine ruin probabilities and implement simulation models in Excel or other softwares.

ULO4: Explain why legislation, accounting standards, codes of conduct, and professional requirements are necessary and how the business environment affects the management of the financial services business.

ULO5: Identify and discuss the tools which can be used to manage risk, including the impact of diversification and leverage, capital, risk pooling and risk transfer.

Assessment Tasks

| Name | Weighting | Hurdle | Due |
|--|-----------|--------|--------------------|
| <u>Formal and observed learning: Exam</u> | 40% | No | Final Exams Period |
| <u>Professional practice: Managing financial risks</u> | 20% | No | Week 11 |
| <u>Formal and observed learning: Test</u> | 40% | No | Week 7 |

Formal and observed learning: Exam

Assessment Type ¹: Examination

Indicative Time on Task ²: 28 hours

Due: **Final Exams Period**

Weighting: **40%**

The purpose of this assessment is for you to formally demonstrate the expertise you have gained in this unit.

You will participate in a 2-hour exam held during the University Examination period. Important information about the exam will be made available on the unit iLearn page. You should also review the [MQ Exams website](#) for general tips.

Deliverable: Formal exam Individual assessment

On successful completion you will be able to:

- Comprehend how the actuarial control cycle is used to identify and manage financial risks.
- Construct simple cash flow models which can be used for decision making and

implement these in Excel or other softwares.

- Apply demographic data and statistical models to price policies, determine ruin probabilities and implement simulation models in Excel or other softwares.
- Explain why legislation, accounting standards, codes of conduct, and professional requirements are necessary and how the business environment affects the management of the financial services business.
- Identify and discuss the tools which can be used to manage risk, including the impact of diversification and leverage, capital, risk pooling and risk transfer.

Professional practice: Managing financial risks

Assessment Type ¹: Quantitative analysis task

Indicative Time on Task ²: 15 hours

Due: **Week 11**

Weighting: **20%**

The purpose of the assessment is for you to gain experience in applying actuarial and financial concepts to real-world scenarios.

You will build and implement cash flow models in Excel or similar software, apply demographic data and statistical models for pricing and simulations, explain the importance of legislation, standards, and professional requirements in financial services, and discuss risk management tools such as diversification, leverage, and risk pooling.

Skills in focus: - Analytical skills - Discipline knowledge - Critical thinking and problem solving

Deliverable: Written report and Spreadsheet analysis Individual assessment

On successful completion you will be able to:

- Comprehend how the actuarial control cycle is used to identify and manage financial risks.
- Construct simple cash flow models which can be used for decision making and implement these in Excel or other softwares.
- Apply demographic data and statistical models to price policies, determine ruin probabilities and implement simulation models in Excel or other softwares.
- Explain why legislation, accounting standards, codes of conduct, and professional requirements are necessary and how the business environment affects the management of the financial services business.
- Identify and discuss the tools which can be used to manage risk, including the impact of

diversification and leverage, capital, risk pooling and risk transfer.

Formal and observed learning: Test

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 20 hours

Due: **Week 7**

Weighting: **40%**

The purpose of this assessment is for you to demonstrate your expertise in aspects of the actuarial control cycle.

You will participate in a formal test.

Skills in focus: - Discipline Knowledge - Digital skills [Excel or similar]

Deliverable: Tests Individual assessment

On successful completion you will be able to:

- Comprehend how the actuarial control cycle is used to identify and manage financial risks.
- Construct simple cash flow models which can be used for decision making and implement these in Excel or other softwares.
- Apply demographic data and statistical models to price policies, determine ruin probabilities and implement simulation models in Excel or other softwares.
- Explain why legislation, accounting standards, codes of conduct, and professional requirements are necessary and how the business environment affects the management of the financial services business.
- Identify and discuss the tools which can be used to manage risk, including the impact of diversification and leverage, capital, risk pooling and risk transfer.

¹ If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the [Writing Centre](#) for academic skills support.

² Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

Lectures: 2h lectures are held each week, in class (and recorded via Echo360).

Pre-recorded videos: students are also responsible to watch pre-recorded videos (about Excel and R programming) to complement their learning. The content of those videos is assessable.

Tutorials: 1h tutorials are held each week (starting in Week 2), in class (and they are NOT recorded).

Information about unit **Resources** can be found on the iLearn site of the unit.

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](https://policies.mq.edu.au) (<https://policies.mq.edu.au>). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Assessment Procedure](#)
- [Complaints Resolution Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies](https://students.mq.edu.au/support/study/policies) (<https://students.mq.edu.au/support/study/policies>). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit [Policy Central](https://policies.mq.edu.au) (<https://policies.mq.edu.au>) and use the [search tool](#).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/student-conduct>

Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit connect.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe [academic integrity](#) – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free [online writing and maths support](#), [academic skills development](#) and [wellbeing consultations](#).

Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

Academic Success

[Academic Success](#) provides resources to develop your English language proficiency, academic writing, and communication skills.

- [Workshops](#)
- [Chat with a WriteWISE peer writing leader](#)
- [Access StudyWISE](#)
- [Upload an assignment to Studiosity](#)
- [Complete the Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

Student Services and Support

Macquarie University offers a range of [Student Support Services](#) including:

- [IT Support](#)
- [Accessibility and disability support](#) with study
- Mental health [support](#)
- [Safety support](#) to respond to bullying, harassment, sexual harassment and sexual assault
- [Social support](#) including information about finances, tenancy and legal issues
- [Student Advocacy](#) provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via the [Service Connect Portal](#), or contact [Service Connect](#).

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.

Unit information based on version 2025.02 of the [Handbook](#)