



ACST8040

Quantitative Research Methods

Session 2, In person-scheduled-weekday, North Ryde 2026

Department of Actuarial Studies and Business Analytics

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General Information

Unit convenor and teaching staff

UC, Lecturer

Pavel Shevchenko

pavel.shevchenko@mq.edu.au

Lecturer

Simon Wong

simon.wong@mq.edu.au

Credit points

10

Prerequisites

Admission to MActPrac

Corequisites

STAT8310

Co-badged status

This unit is co-badged ACST6040

Unit description

This unit focuses on statistical approaches for research in Business and Economics and related disciplines. Topics include a range of probability and statistical models, their theoretical basis, the assessment and evaluation of the models, and methods of statistical inference for data analysis. The unit will also consider applications of the above models and techniques to the actuarial practice discipline.

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: Evaluate the theoretical foundations of statistical models used in actuarial research and apply these models to practical problems.

ULO2: Critique, replicate and extend basic actuarial research using statistical models.

ULO3: Analyse problems relating to statistical modelling, and communicate ideas

relating to implementation of statistical models.

ULO4: Interpret empirical results from statistical modelling in actuarial context, and assess their implications for research and professional practice.

ULO5: Use statistical software R to solve actuarial problems.

General Assessment Information

Late Assessment Submission Penalty (written assessments)

If you submit your assessment late, 5% of the total possible marks will be deducted for each day (including weekends), up to 7 days. Submissions more than 7 days late will receive a mark of 0.

Example 1 (out of 100): If you score 85/100 but submit 20 hours late, you will lose 5 marks and receive 80/100.

Example 2 (out of 30): If you score 27/30 but submit 20 hours late, you will lose 1.5 marks and receive 25.5/30.

Extensions:

Automatic short extension: Some assessments are eligible for automatic short extension. You can only apply for an automatic short extension before the due date.

Special Consideration: If you need more time due to serious issues and for any assessments that are not eligible for Short Extension, you must apply for Special Consideration. Need help? Review the [Special Consideration page](#) for further details.

Assessment Tasks

Name	Weighting	Hurdle	Due	Groupwork/Individual	Short Extension	AI Approach
Professional practice: Statistical analysis problem set 1	50%	No	07/09/2026	Individual	Yes	Open AI
Professional practice: Statistical analysis problem set 2	50%	No	05/11/2026	Individual	Yes	Open AI

Professional practice: Statistical analysis problem set 1

Assessment Type ¹: Problem-based task

Indicative Time on Task ²: 35 hours

Due: **07/09/2026**

Weighting: **50%**

Groupwork/Individual: Individual

Short extension ³: Yes

AI Approach: Open AI

The purpose of this assessment is for you to demonstrate your capability of solving complex statistical problems and providing detailed solutions using the statistical software R.

You will apply statistical techniques using R to generate robust solutions to problem scenarios.

Skills in focus:

- Critical thinking and problem solving
- Discipline knowledge
- Digital skills
- Communication skills

Deliverable(s): Solutions to the problem-solving questions

Individual assessment

On successful completion you will be able to:

- Evaluate the theoretical foundations of statistical models used in actuarial research and apply these models to practical problems.
- Critique, replicate and extend basic actuarial research using statistical models.
- Analyse problems relating to statistical modelling, and communicate ideas relating to implementation of statistical models.
- Interpret empirical results from statistical modelling in actuarial context, and assess their implications for research and professional practice.
- Use statistical software R to solve actuarial problems.

Professional practice: Statistical analysis problem set 2

Assessment Type ¹: Problem-based task

Indicative Time on Task ²: 35 hours

Due: **05/11/2026**

Weighting: **50%**

Groupwork/Individual: Individual

Short extension ³: Yes

AI Approach: Open AI

The purpose of this assessment is for you to demonstrate your capability in solving complex statistical problems and producing detailed numerical solutions using the statistical software R.

You will perform numerical analyses and apply appropriate statistical techniques to solve a set of

problem-based questions.

Skills in focus:

- Critical thinking and problem solving
- Discipline knowledge
- Digital skills
- Communication skills

Deliverable(s): Solutions to the problem-solving questions.

Individual assessment

On successful completion you will be able to:

- Evaluate the theoretical foundations of statistical models used in actuarial research and apply these models to practical problems.
- Critique, replicate and extend basic actuarial research using statistical models.
- Analyse problems relating to statistical modelling, and communicate ideas relating to implementation of statistical models.
- Interpret empirical results from statistical modelling in actuarial context, and assess their implications for research and professional practice.
- Use statistical software R to solve actuarial problems.

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
- [Academic Success](#) 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.

³ An automatic short extension is available for some assessments. Apply through the [Service Connect Portal](#).

Delivery and Resources

Please refer to iLearn

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#) (<https://policycentral.mq.edu.au>)

[s.mq.edu.au](https://students.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/](https://students.mq.edu.au/support/)

Academic Success

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

- [Ask a Study Coach](#)
- [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 <https://students.mq.edu.au/support/technology/service-desk>.

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 2026.04 of the [Handbook](#)