ACST8082

Contingent Payments

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

Department of Actuarial Studies and Business Analytics

Contents

General Information

Unit convenor and teaching staff
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Credit points
10

Prerequisites
ACST8081 and STAT8310

Corequisites

Co-badged status
ACST2055

Unit description
This unit covers the analysis of cash flows dependent on uncertain events due to mortality and other factors. It introduces the concept of the expected present value of payments under various life insurance contracts, including whole life, term and endowment assurances; immediate and temporary annuities; and deferred assurances and annuities. The standard international actuarial notation in life insurance is used extensively. Probability models and life tables are used to calculate the expected present values accurately based on ultimate or select mortality. Furthermore, important concepts of pricing and reserving for future contingent liabilities are discussed. Equations of value are established to calculate net premiums. Prospective and retrospective net premium reserves required to meet future liabilities are determined and compared. Techniques for the valuation of annuity and assurance products involving two lives are developed. Students gaining a credit average in both ACST8081 and ACST8082 (minimum mark of 60 on both units) will satisfy the requirements for exemption from the professional subject CM1 of the Actuaries Institute.

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: Interpret and apply simple survival models as well as ultimate and select mortality rates.

ULO2: Apply contingent payment techniques to determine actuarial present values and variances of benefits for simple life insurance contracts and for contracts contingent on two lives.
ULO3: Calculate premiums and policy values for various life insurance contracts, both with and without allowance for operating expenses.
ULO4: Analyse the profit arising from life insurance contracts in simple scenarios.
ULO5: Identify key unit concepts and to integrate them to solve and analyse novel problems.
ULO6: Explain how the contingent payment techniques can be applied to complex life-contingent problems.

General Assessment Information

Late Submission Penalties 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.

Assessment Tasks

Name	Weighting	Hurdle	Due	Groupwork/Individual	Short Extension	AI Approach
Professional practice: Contingent payments analysis	20%	No	18/09/2026	Individual	Yes	Open AI
Formal examination: Test	20%	No	15/10/2026	Individual	No	Observed
Formal examination	60%	No	Exam period	Individual	No	Observed

Professional practice: Contingent payments analysis

Assessment Type [1]: Problem-based task
Indicative Time on Task [2]: 15 hours
Due: **18/09/2026**
Weighting: **20%**
Groupwork/Individual: Individual
Short extension [3]: Yes

AI Approach: Open AI

The purpose of this assessment is for you to demonstrate your problem solving skills using Excel for actuarial applications.

You will complete an individual assignment focusing on survival models, mortality rates, actuarial present values, and policy calculations.

Skills in focus:

- Digital skills
- Discipline knowledge
- Work readiness

Deliverable(s): Assignment - completed Excel worksheet/s.

Individual assessment

On successful completion you will be able to:

- Interpret and apply simple survival models as well as ultimate and select mortality rates.
- Apply contingent payment techniques to determine actuarial present values and variances of benefits for simple life insurance contracts and for contracts contingent on two lives.
- Calculate premiums and policy values for various life insurance contracts, both with and without allowance for operating expenses.
- Identify key unit concepts and to integrate them to solve and analyse novel problems.
- Explain how the contingent payment techniques can be applied to complex life-contingent problems.

Formal examination: Test

Assessment Type [1]: Examination
Indicative Time on Task [2]: 10 hours
Due: **15/10/2026**
Weighting: **20%**
Groupwork/Individual: Individual
Short extension [3]: No
AI Approach: Observed

The purpose of this assessment is for you to demonstrate your application of actuarial modelling

techniques, including survival models, mortality rates, contingent payment calculations, premium and policy value derivation, and profit analysis.

You will participate in a formal test (approximately 90 minutes) during class time related to topics learnt in the semester.

Skills in focus:

- Discipline knowledge
- Critical thinking and problem solving

Deliverable(s): Class test demonstrating responses to problem scenarios and discipline related questions.

Individual assessment

On successful completion you will be able to:

- Interpret and apply simple survival models as well as ultimate and select mortality rates.
- Apply contingent payment techniques to determine actuarial present values and variances of benefits for simple life insurance contracts and for contracts contingent on two lives.
- Calculate premiums and policy values for various life insurance contracts, both with and without allowance for operating expenses.
- Analyse the profit arising from life insurance contracts in simple scenarios.
- Identify key unit concepts and to integrate them to solve and analyse novel problems.

Formal examination

Assessment Type [1]: Examination
Indicative Time on Task [2]: 28 hours
Due: **Exam period**
Weighting: **60%**
Groupwork/Individual: Individual
Short extension [3]: No
AI Approach: Observed

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

You will participate in a 3-hour exam with 10 minutes reading time 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(s): Formal exam.

Individual assessment

On successful completion you will be able to:

- Interpret and apply simple survival models as well as ultimate and select mortality rates.
- Apply contingent payment techniques to determine actuarial present values and variances of benefits for simple life insurance contracts and for contracts contingent on two lives.
- Calculate premiums and policy values for various life insurance contracts, both with and without allowance for operating expenses.
- Analyse the profit arising from life insurance contracts in simple scenarios.
- Identify key unit concepts and to integrate them to solve and analyse novel problems.
- Explain how the contingent payment techniques can be applied to complex life-contingent problems.

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[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

Classes

Classes: 4 hours of teaching per week consisting of: 3 hours lecture and 1 hour tutorial/practical class.

Required and Recommended Texts and/or Materials

No textbooks are prescribed for this unit. Detailed notes, exercises and solutions are available on the unit's web site.

Technology Used and Required

You will require a calculator. For the final exam, you may only use non-programmable calculators which are not able to store text.

You will also need to be able to construct spreadsheets for tutorial exercises. You will also be required to use a spreadsheet for the assignment. We do not prescribe any particular brand of spreadsheet, although materials will be provided in MS Excel.

You require access to a computer to access material on the unit's iLearn web site.

Unit Webpage

Course materials, including pre-recorded lectures, are available on the iLearn page.

To access the teaching website, go to iLearn and login using your usual login and password.

Unit Schedule

Week	Topics covered in lectures
1	Life tables and survival models
2	Valuing single payment benefits
3	Valuing life annuities
4	Select mortality
	Net premiums
5	Policy values
6	Variable benefits
7	Operating expenses
	Profit testing
8	Participating policies
9	Analysis of profits
	Profit loading
10	Joint life and last survivor statuses (class test)
11	Joint life and last survivorship benefits
12	Contingent and reversionary benefits
13	Revision

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (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). 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) 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.

- 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 2026.03 of the Handbook