



# ACST859

## Contingent Payments 1

S1 Day 2015

*Dept of Applied Finance and Actuarial Studies*

### Contents

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<a href="#"><u>General Information</u></a>	2
<a href="#"><u>Learning Outcomes</u></a>	2
<a href="#"><u>General Assessment Information</u></a>	3
<a href="#"><u>Assessment Tasks</u></a>	3
<a href="#"><u>Delivery and Resources</u></a>	5
<a href="#"><u>Unit Schedule</u></a>	5
<a href="#"><u>Learning and Teaching Activities</u></a>	6
<a href="#"><u>Policies and Procedures</u></a>	7
<a href="#"><u>Graduate Capabilities</u></a>	8
<a href="#"><u>Changes from Previous Offering</u></a>	11
<a href="#"><u>Research &amp; Practice, Global &amp; Sustainability</u></a>	11

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#### **Disclaimer**

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## General Information

Unit convenor and teaching staff

Unit Convenor

Xian Zhou

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E4A 607

Refer to the unit's web site

Credit points

4

Prerequisites

Corequisites

ACST851 and (STAT806 or STAT810 or (ACST601 and ACST604))

Co-badged status

Unit description

This unit covers the analysis of cash flows dependent on uncertain events of mortality. Single decrement survival models will be used to evaluate the expected present values of payments under life insurance and annuity contracts, and calculate the premiums of such contracts. The concepts of pricing and reserving for future contingent liabilities are considered, and the methods of calculating required reserves will be discussed.

## 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:

Understand simple survival models and related properties

Master the skills to calculate the expected present values and the variances of benefits in standard life assurance and annuity contracts

Understand the concepts of select and ultimate mortalities and their applications

Familiar with the calculations of net premiums and reserves under various life insurance contracts

Able to calculate prospective and retrospective policy values under variable benefits and

with-profit life insurance policies

Understand the costs and profits of life insurance business and be able to calculate gross premiums and reserves

## General Assessment Information

### Extensions and penalties on coursework assessment tasks:

No extensions will be granted. Late tasks will be accepted up to 72 hours after the submission deadline. There will be a deduction of 20% of the total available marks made from the total awarded mark for each 24 hour period or part thereof that the submission is late (for example, 25 hours late in submission – 40% penalty). This penalty does not apply for cases in which an application for disruption to studies is made and approved.

### Submission of assessment tasks:

Answers to the quiz are to be submitted to BESS in paper form by 3pm, Thursday 19 March 2015.

Answers to the take-home test are to be submitted to BESS in paper form by 3pm, Thursday 7 May 2015.

### Open-book final examination:

The final examination will be open book in the sense that students can bring in any materials written or printed on paper with any size and number of pages.

### Gradebook:

It is the responsibility of students to view their marks for each within session assessment on iLearn within 20 days of posting. If there are any discrepancies, students must contact the unit convenor immediately. Failure to do so will mean that queries received after the release of final results regarding assessment tasks (not including the final exam mark) will not be addressed.

## Assessment Tasks

Name	Weighting	Due
<u>Quiz</u>	10%	19 March
<u>Test</u>	20%	7 May
<u>Examination</u>	70%	University Examination Period

## Quiz

Due: **19 March**

Weighting: **10%**

Multiple-choice questions

On successful completion you will be able to:

- Understand simple survival models and related properties
- Understand the concepts of select and ultimate mortalities and their applications

## Test

Due: **7 May**

Weighting: **20%**

Problem-solving questions

On successful completion you will be able to:

- Understand simple survival models and related properties
- Master the skills to calculate the expected present values and the variances of benefits in standard life assurance and annuity contracts
- Understand the concepts of select and ultimate mortalities and their applications
- Familiar with the calculations of net premiums and reserves under various life insurance contracts
- Able to calculate prospective and retrospective policy values under variable benefits and with-profit life insurance policies

## Examination

Due: **University Examination Period**

Weighting: **70%**

Open-book examination with a combination of multiple-choice problem-solving questions.

On successful completion you will be able to:

- Understand simple survival models and related properties
- Master the skills to calculate the expected present values and the variances of benefits in standard life assurance and annuity contracts
- Understand the concepts of select and ultimate mortalities and their applications
- Familiar with the calculations of net premiums and reserves under various life insurance contracts

- Able to calculate prospective and retrospective policy values under variable benefits and with-profit life insurance policies
- Understand the costs and profits of life insurance business and be able to calculate gross premiums and reserves

## Delivery and Resources

### Classes

This unit is taught through 3 hours of lectures and 2 hours of tutorials per week.

The timetable for classes can be found on the University web site at: <http://www.timetables.mq.edu.au/>

Tutorials start in Week 1.

### Unit Web Page

The web page for this unit can be found at: <http://ilearn.mq.edu.au>

### Technology Used and required

You will need access to the internet to obtain course information and download teaching materials from the unit website.

It is your responsibility to check the unit website regularly to make sure that you are up-to-date with the information for the unit.

### Required and Recommended Texts and/or Materials

Lecture Notes are the required materials and will be posted on the website before the lectures.

The main additional reading materials are the ActEd CT4 notes. This will also be used as background reading for ACST359/819.

### What is required to complete the unit satisfactorily

To be eligible to pass this unit, a pass is required in the final examination.

## Unit Schedule

Week	Topics covered
1	Review of probability; Expected present value; Introduction to survival models

2	Life assurance contracts
3	Life annuity contracts
4	The Life table; Select mortality
5	Evaluation of life insurance contracts
6	Net premiums and reserves
BREAK	
7	Prospective and retrospective policy values
8	Policies with variable benefits
9	With-profit policies
10	Gross premiums
11	Gross premiums and reserves; Profit and loss in life insurance
12	Profit and loss in life insurance
13	Revision

**Note:** This is only a tentative schedule. Small departures are expected on the basis of week to week progress.

## Learning and Teaching Activities

### Teaching

The unit is taught through 3 hours of lectures and 2 hours of tutorial per week. Lectures will cover the topics and materials in accordance with the syllabus of Subject CT5 of Institute of Actuaries (IA). Tutorials will discuss exercise questions covered by the lectures.

### Learning

Students are expected to listen carefully to all lectures and tutorials; participate in discussions during tutorials, read relevant materials in advance; review the knowledge learnt in classes; and complete assessment and practice tasks independently.

### Practices

Practices on covered topics will be provided in addition to tutorial exercises.

## Attendance

Attending all classes is crucial to achieving satisfactory performance.

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy [http://mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://mq.edu.au/policy/docs/academic_honesty/policy.html)

Assessment Policy <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy <http://mq.edu.au/policy/docs/grading/policy.html>

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Grievance Management Policy [http://mq.edu.au/policy/docs/grievance\\_management/policy.html](http://mq.edu.au/policy/docs/grievance_management/policy.html)

Disruption to Studies Policy [http://www.mq.edu.au/policy/docs/disruption\\_studies/policy.html](http://www.mq.edu.au/policy/docs/disruption_studies/policy.html) *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of Policy Central.

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: [https://students.mq.edu.au/support/student\\_conduct/](https://students.mq.edu.au/support/student_conduct/)

## Results

Results shown in *iLearn*, 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 [ask.mq.edu.au](http://ask.mq.edu.au).

### Supplementary Exams

*Further information regarding supplementary exams, including dates, is available here*

[http://www.businessandconomics.mq.edu.au/current\\_students/undergraduate/how\\_do\\_i/special\\_consideration](http://www.businessandconomics.mq.edu.au/current_students/undergraduate/how_do_i/special_consideration)

## Student Support

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

## Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

## Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

## Student Enquiries

For all student enquiries, visit Student Connect at [ask.mq.edu.au](http://ask.mq.edu.au)

## IT Help

For help with University computer systems and technology, visit <http://informatics.mq.edu.au/help/>.

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

## Graduate Capabilities

### PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

### Learning outcomes

- Understand simple survival models and related properties
- Master the skills to calculate the expected present values and the variances of benefits in standard life assurance and annuity contracts
- Understand the concepts of select and ultimate mortalities and their applications
- Familiar with the calculations of net premiums and reserves under various life insurance contracts
- Able to calculate prospective and retrospective policy values under variable benefits and with-profit life insurance policies
- Understand the costs and profits of life insurance business and be able to calculate gross premiums and reserves



## Assessment tasks

- Quiz
- Test
- Examination

## Learning and teaching activities

- The unit is taught through 3 hours of lectures and 2 hours of tutorial per week. Lectures will cover the topics and materials in accordance with the syllabus of Subject CT5 of Institute of Actuaries (IA). Tutorials will discuss exercise questions covered by the lectures.
- Students are expected to listen carefully to all lectures and tutorials; participate in discussions during tutorials, read relevant materials in advance; review the knowledge learnt in classes; and complete assessment and practice tasks independently.
- Practices on covered topics will be provided in addition to tutorial exercises.

## PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

## Learning outcomes

- Master the skills to calculate the expected present values and the variances of benefits in standard life assurance and annuity contracts
- Understand the concepts of select and ultimate mortalities and their applications
- Able to calculate prospective and retrospective policy values under variable benefits and with-profit life insurance policies
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- Students are expected to listen carefully to all lectures and tutorials; participate in discussions during tutorials, read relevant materials in advance; review the knowledge learnt in classes; and complete assessment and practice tasks independently.
- Practices on covered topics will be provided in addition to tutorial exercises.

## PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

## Learning outcomes

- Familiar with the calculations of net premiums and reserves under various life insurance contracts
- Able to calculate prospective and retrospective policy values under variable benefits and with-profit life insurance policies
- Understand the costs and profits of life insurance business and be able to calculate gross premiums and reserves

## Assessment tasks

- Test
- Examination

## Learning and teaching activities

- The unit is taught through 3 hours of lectures and 2 hours of tutorial per week. Lectures will cover the topics and materials in accordance with the syllabus of Subject CT5 of Institute of Actuaries (IA). Tutorials will discuss exercise questions covered by the lectures.
- Students are expected to listen carefully to all lectures and tutorials; participate in discussions during tutorials, read relevant materials in advance; review the knowledge learnt in classes; and complete assessment and practice tasks independently.

- Practices on covered topics will be provided in addition to tutorial exercises.

## **Changes from Previous Offering**

Teaching materials are updated.

## **Research & Practice, Global & Sustainability**

This unit is designed to tackle life insurance problems in practice.

The knowledge and skills provided by this unit are globally accepted and recognized.