ACST882

Contingent Payments

S2 Day 2019

Department of Actuarial Studies and Business Analytics

Contents

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General Information

Unit convenor and teaching staff
Simon Guthrie
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Credit points
4

Prerequisites
ACST881 and (STAT810 or STAT806)

Corequisites

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 along with mortality profit. The ideas will be extended to cover insurance and annuities involving two lives. Profit testing of conventional and unit-linked contracts will also be covered.

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:

Interpret and apply simple survival models, select and ultimate mortality rates.

Calculate expected 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.

General Assessment Information

For all assessments:

- Assessment criteria for all assessment tasks will be provided on the unit iLearn site.

- All individual assessment results will be made available under Grades on the website.

- It is the responsibility of students to view their marks for each within-session assessment on iLearn within 20 working 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 marks (not including the final exam mark) will not be addressed.

- In the cases where a special consideration application is approved, the student may be offered an alternative assessment or may receive a mark based on the percentage mark achieved by the student in one or more other assessment tasks, at the unit convenor's discretion.

Assessment Tasks

Name	Weighting	Hurdle	Due
Online Quiz	5%	No	Week 3
Assignment	15%	No	Week 8
Class test	20%	No	Week 10
Final exam	60%	No	Exam period

Online Quiz

Due: **Week 3**
Weighting: **5%**

Online quiz on Week 1 and 2 lectures.

You should complete the quiz online. It is on this unit's iLearn web site.

Once you start the quiz, you have a maximum of 2 hours to complete it. The quiz becomes available at 12:01 am on Saturday 17 August and becomes unavailable at 11:59pm on Monday 19 August. That is, the quiz is available for 2 minutes less than 3 days. You may start the quiz anytime within that range, but if you start it within 2 hours of the end of that range then it still closes at the end of that range, meaning you get less than 2 hours to complete it.

In answering the online quiz, you may consult your notes or any textbooks you like, but you may

not seek assistance from any person in any way whatsoever. This includes seeking assistance in interpreting what the questions mean. You should not discuss any of the quiz questions with any of your class mates until after the deadline for submitting the quiz has passed. Even if you have already submitted the quiz and so can no longer change your answers, your class mates may not have submitted their quiz.

No extensions will be granted. Students who have not submitted the task prior to the deadline will be awarded a mark of 0 for the task, except for cases in which an application for special consideration is made and approved.

On successful completion you will be able to:

- Interpret and apply simple survival models, select and ultimate mortality rates.
- Calculate expected present values and variances of benefits for simple life insurance contracts and for contracts contingent on two lives.

Assignment

Due: **Week 8**
Weighting: **15%**

The assignment involves using a spreadsheet to investigate efficient calculation methods for some of the assurance and/or annuity functions considered in this unit.

Assignments should be submitted via the tool on the unit's iLearn web site.

No extensions will be granted. There will be a deduction of 10% 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 – 20% penalty). This penalty does not apply for cases in which an application for special consideration is made and approved. No submission will be accepted after solutions have been posted.

On successful completion you will be able to:

- Interpret and apply simple survival models, select and ultimate mortality rates.
- Calculate expected present values and variances of benefits for simple life insurance contracts and for contracts contingent on two lives.

Class test

Due: **Week 10**
Weighting: **20%**

The class test will be a 75-minute written paper with no reading time, held during the lecture time. It will cover Sections 3 to 9.

Students who have not sat the test will be awarded a mark of 0 for the task, except for cases in which an application for special consideration is made and approved.

On successful completion you will be able to:

- Interpret and apply simple survival models, select and ultimate mortality rates.
- Calculate expected 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.

Final exam

Due: **Exam period**
Weighting: **60%**

The final examination will be a three-hour written paper with ten minutes reading time, held during the University Examination period.

On successful completion you will be able to:

- Interpret and apply simple survival models, select and ultimate mortality rates.
- Calculate expected 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.

Delivery and Resources

Classes

There are 4 hours of face-to-face teaching per week.

The timetables for classes can be found on the University website at: https://timetables.mq.edu.au/2019/.

Tutorial questions will be reviewed in the 4th hour of teaching, commencing in week 2 of the session. Students are expected to have attempted the previous weeks tutorial questions before coming to this 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 material is available on the iLearn. To access the teaching website, go to http://ilearn.mq.edu.au and login using your usual login and password.

Unit Schedule

The following schedule of topics is also provided as a separate printer-friendly document in the administration section of this unit's iLearn web site.

Week	Week begins	Topics	Other
1	29 Jul	Life tables and survival models	
2	5 Aug	Valuing single payment benefits	
3	12 Aug	Valuing life annuities	Online quiz
4	19 Aug	Select mortality Net premiums	Census date
5	26 Aug	Policy values	
6	2 Sep	Variable benefits	
7	9 Sep	Participating policies	
		---- *2 week study break* ----	
8	30 Sep	Operating expense Analysis of profits	Assignment due
9	7 Oct	Profit loading	
10	14 Oct	Joint life and last survivorship statuses	Class test
11	21 Oct	Joint life and last survivorship benefits	
12	28 Oct	Contingent and reversionary benefits	
13	4 Nov	Revision	

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://staff.m

q.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-centr
al). 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
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy *(**Note:** The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)*

Undergraduate students seeking more policy resources can visit the Student Policy Gateway (htt
ps://students.mq.edu.au/support/study/student-policy-gateway). It is your one-stop-shop for the
key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (http
s://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/p
olicy-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/study/getting-started/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 ask.mq.edu.au or if you are a Global MBA
student contact globalmba.support@mq.edu.au

Student Support

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

Learning Skills

Learning Skills (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

If you are a Global MBA student contact globalmba.support@mq.edu.au

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.

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

- Interpret and apply simple survival models, select and ultimate mortality rates.
- Calculate expected 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.

Assessment tasks

- Online Quiz
- Assignment
- Class test
- Final exam

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

- Interpret and apply simple survival models, select and ultimate mortality rates.
- Calculate expected 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.

Assessment tasks

- Assignment
- Class test
- Final exam

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

- Interpret and apply simple survival models, select and ultimate mortality rates.
- Calculate expected 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.
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Assessment tasks

- Assignment
- Class test
- Final exam

Changes from Previous Offering

This is the first offering of this unit.

Changes since First Published

Date	Description
21/07/2019	Unit convenor details changed