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General Information

Unit convenor and teaching staff
Xian Zhou
xian.zhou@mq.edu.au

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://students.mq.edu.au/important-dates

Learning Outcomes

1. Understand simple survival models and related properties
2. Master the skills to calculate the expected present values and the variances of benefits in standard life assurance and annuity contracts
3. Understand the concepts of select and ultimate mortalities and their applications
4. Familiar with the calculations of net premiums and reserves under various life insurance contracts
5. Able to calculate prospective and retrospective policy values under variable benefits and withprofit life insurance policies
6. 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. 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 disruption of studies is made and approved. No submission will be accepted after solutions have been posted.

Submission of assessment tasks:

Answers to the quiz are to be submitted in paper form by 11am, Wednesday 30 March 2016. Answers to the take-home test are to be submitted in paper form by 3pm, Wednesday 18 May 2016.

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.

Supplementary exams:

Further information regarding supplementary exams, including dates, is available here http://www.businessandeconomics.mq.edu.au/current_students/undergraduate/how_do_i/disruption_to_studies.

Assessment Tasks

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Quiz
Due: 30 March
Weighting: 10%
True/false and multiple-choice questions

This Assessment Task relates to the following Learning Outcomes:
• Understand simple survival models and related properties
• Understand the concepts of select and ultimate mortalities and their applications
• Understand the costs and profits of life insurance business and be able to calculate gross premiums and reserves

Test
Due: 18 May
Weighting: 20%
Problem-solving questions

This Assessment Task relates to the following 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 withprofit life insurance policies
• Understand the costs and profits of life insurance business and be able to calculate gross premiums and reserves

Examination
Due: University Examination Period
Weighting: 70%
Open-book examination with a combination of true/false, multiple-choice and problem-solving questions

This Assessment Task relates to the following 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
- 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 withprofit 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 2.

**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 CT5 notes. This will also be used as background reading for ACST860 Contingent Payments 2.

**What is required to complete the unit satisfactorily**

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

https://unitguides.mq.edu.au/unit_offerings/68390/unit_guide/print
Unit Schedule

Week 1: Review of probability; Expected present value; Introduction to survival models
Week 2: Life assurance contracts
Week 3: Life annuity contracts
Week 4: The Life table; Select mortality
Week 5: Evaluation of life insurance contracts
Week 6: Net premiums and reserves
Week 7: Prospective and retrospective policy values
Week 8: Policies with variable benefits
Week 9: With-profit policies
Week 10: Gross premiums
Week 11: Gross premiums and reserves; Profit and loss in life insurance
Week 12: Profit and loss in life insurance
Week 13: Revision

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

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


Disruption to Studies Policy 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).

**Student Support**

Macquarie University provides a range of support services for students. For details, visit [http://students.mq.edu.au/support/](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 Enquiry Service**

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

**Equity 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.

**IT Help**

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

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

**Assessment tasks**

- Quiz
- Test
- Examination

**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
- 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 withprofit 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

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

• 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