



ACST859

Contingent Payments 1

S2 Day 2014

Applied Finance and Actuarial Studies

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General Information

Unit convenor and teaching staff

Unit Convenor

Piet de Jong

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E4A 610

Tues 15h-16h

Lecturer

Jim Farmer

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Contact via via forum -- please post

please use forum

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

Understand recursive reserving calculations in both discrete and continuous time.

General Assessment Information

- **To be eligible to pass this unit, a pass is required in the final examination**
- **Criteria and standards for grading**
 - Numerically correct answers based on correct reasoning
- **Submission methods**
 - Assignments are submitted via iLearn
 - Midterm is in class on the indicated date
- **Late assessments, extensions, penalties, resubmissions**
 - 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.
- **Midterm and Final examination conditions.**
 - You are permitted ONE A4 page of paper containing reference material printed on both sides. The material may be handwritten or typed. The page will not be returned at the end of the midterm or final examination.
 - 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.
- **Standardised Numerical Grade (SNG)** will be awarded based on your overall performance. An SNG gives you an indication of how you have performed within the band for your descriptive grade. The SNG is not a mark, and you may not be able to work it out based on your raw examination and other assessment marks. Nor are you able to determine you are “one mark away” from a different grade.

- **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

Assessment Tasks

Name	Weighting	Due
Assignment 1	10%	29/082014
Class Test	10%	9/09/2014
Assignment 2	10%	14/11/2014
Final Examination	70%	TBA

Assignment 1

Due: **29/082014**

Weighting: **10%**

Perform various calculations to do with life insurance contract valuation

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

Class Test

Due: **9/09/2014**

Weighting: **10%**

One hour in class test

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

Assignment 2

Due: **14/11/2014**

Weighting: **10%**

Reserving calculations

On successful completion you will be able to:

- Able to calculate prospective and retrospective policy values under variable benefits and with-profit life insurance policies

Final Examination

Due: **TBA**

Weighting: **70%**

3 hour exam scheduled as per exam timetable.

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
- Understand recursive reserving calculations in both discrete and continuous time.

Delivery and Resources

- **Technology used and required:**
 - Calculator (non programmable only are allowed in Midterm/Final)
 - You will need access to the internet to obtain course information and download teaching materials.

- For some exercises it may be helpful and/or useful to use a spreadsheet program.
- **Required unit materials**
 - Course notes available through iLearn
 - Lecture Notes will be posted on the website before the lectures.
- **Recommended readings**
 - The main additional reading materials are the ActEd CT5 Notes (2011 or later edition).
 - Reading of the ActEd CT5 Notes (Chapters 1 – 7) will considerably enhance the benefits you can gain from the lectures.
 - The ActEd notes can be purchased through ASSOC. More information about ASSOC can be found at its website <http://www.mqassoc.org>
 - Additional reference texts are
 - [Life Contingencies -- Jordan URL](#)
 - [Life Contingencies -- Neill](#)
- **What is required to complete the unit satisfactorily**
 - Must pass final exam
- **Link to the Timetables portal:**
 - <http://timetables.mq.edu.au>
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Unit Schedule

We will follow Lecture Notes 1-11 in order at a pace consistent with class understanding.

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

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

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/

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) 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

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
- Understand recursive reserving calculations in both discrete and continuous time.

Assessment tasks

- Assignment 1
- Class Test
- Assignment 2
- Final 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

- 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
- Understand recursive reserving calculations in both discrete and continuous time.

Assessment tasks

- Assignment 1
- Class Test
- Assignment 2
- Final 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

- 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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Assessment tasks

- Assignment 1
- Class Test
- Assignment 2
- Final Examination

Changes from Previous Offering

This year there are two assignments. Previous years only had 1.

Research and Practice

- This unit teaches the principles and mechanics of "Expected Present Value" pricing where the uncertainty is based on mortality. Much research is presently undertaken on "longevity risk" and its interaction with "interest rate" and "market" risk. Also superannuation and the potential shortfalls therein are also the object of much research. The tools and techniques taught in this course are instrumental in coming to grips, understanding, and addressing these issues.