ACST859
Contingent Payments 1
S1 Day 2015
Dept of Applied Finance and Actuarial Studies

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General Information

Unit convenor and teaching staff
Unit Convenor
Xian Zhou
xian.zhou@mq.edu.au
Contact via xian.zhou@mq.edu.au
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 http://students.mq.edu.au/student_admin/enrolmentguide/academicdates/

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 with-profit 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. 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**

<table>
<thead>
<tr>
<th>Name</th>
<th>Weighting</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiz</td>
<td>10%</td>
<td>19 March</td>
</tr>
<tr>
<td>Test</td>
<td>20%</td>
<td>7 May</td>
</tr>
<tr>
<td>Examination</td>
<td>70%</td>
<td>University Examination Period</td>
</tr>
</tbody>
</table>
Quiz
Due: 19 March
Weighting: 10%

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

Test
Due: 7 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 with-profit life insurance policies

Examination
Due: University Examination Period
Weighting: 70%

Open-book examination with a combination of multiple-choice 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 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/](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](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

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics covered</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>
## 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.

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

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

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.

Supplementary Exams
Further information regarding supplementary exams, including dates, is available here

http://www.businessandeconomics.mq.edu.au/current_students/undergraduate/how_do_i/special_consideration

http://unitguides.mq.edu.au/unit_offerings/51623/unit_guide/print
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](http://www.mq.edu.au/disability) who can provide appropriate help with any issues that arise during their studies.

IT Help


When using the University’s IT, you must adhere to the [Acceptable Use Policy](http://www.mq.edu.au/acceptableuse). 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
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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
• 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**

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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
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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.

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.