Unit Outline

MATH5009 Life Contingencies 1
Semester 1, 2016

Unit study package code: MATH5009
Mode of study: Internal
Tuition pattern summary: Note: For any specific variations to this tuition pattern and for precise information refer to the Learning Activities section.
Lecture: 1 x 2 Hours Weekly
Tutorial: 1 x 1 Hours Weekly
Workshop: 1 x 1 Hours Weekly
This unit does not have a fieldwork component.
Credit Value: 25.0
Pre-requisite units: MC-ACTFNS (v.0) Master of Science (Actuarial and Financial Science) or any previous version
Co-requisite units: Nil
Anti-requisite units: Nil
Result type: Grade/Mark
Approved incidental fees: Information about approved incidental fees can be obtained from our website. Visit fees.curtin.edu.au/incidental_fees.cfm for details.

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Faculty of Science and Engineering
Department of Mathematics and Statistics

Acknowledgement of Country
We respectfully acknowledge the Indigenous Elders, custodians, their descendants and kin of this land past and present.

Syllabus
This unit will cover the pricing and valuation of insurance policies for a single life. Students will acquire practical skills and mathematical techniques of relevance to actuarial work in life and health insurance and superannuation (pensions). On completion of the unit, students will be able to price a variety of assurance and annuity policies assuming constant deterministic interest. They will also have knowledge of the differences between ultimate and select mortality, as well as net premiums and gross premiums.

Introduction
This unit provides a grounding in the mathematical techniques which can be used to model and value cash flows dependent on death, survival or other uncertain risks.

Unit Learning Outcomes
All graduates of Curtin University achieve a set of nine graduate attributes during their course of study. These tell an employer that, through your studies, you have acquired discipline knowledge and a range of other skills and attributes which employers say would be useful in a professional setting. Each unit in your course addresses the graduate attributes through a clearly identified set of learning outcomes. They form a vital part in the process referred to as assurance of learning. The learning outcomes tell you what you are expected to know, understand or be able to do in order to be successful in this unit. Each assessment for this unit is carefully designed to test your achievement of one or more of the unit learning outcomes. On successfully completing all of the assessments you will have achieved all of these learning outcomes.

Your course has been designed so that on graduating we can say you will have achieved all of Curtin's Graduate Attributes through the assurance of learning process in each unit.

<table>
<thead>
<tr>
<th>On successful completion of this unit students can:</th>
<th>Graduate Attributes addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Define and develop formulae for the means and variances of the present values of the payments under simple assurance and annuity contracts</td>
<td></td>
</tr>
<tr>
<td>2 Evaluate expected values and variances of a variety of insurance contracts</td>
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</tr>
<tr>
<td>3 Design and formulate a variety of assurance and annuity policies</td>
<td></td>
</tr>
<tr>
<td>4 Calculate net premiums and net premium reserves of simple insurance contracts</td>
<td></td>
</tr>
<tr>
<td>5 Evaluate net and gross premiums for a variety of insurance contracts, and assess the appropriate reserves the company should hold under a range of scenarios</td>
<td></td>
</tr>
</tbody>
</table>

Curtin’s Graduate Attributes

<table>
<thead>
<tr>
<th>Thinking skills (use analytical skills to solve problems)</th>
<th>Information skills (confidence to investigate new ideas)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication skills</td>
<td>Learning how to learn (apply principles learnt to new situations)</td>
</tr>
<tr>
<td>Technology skills</td>
<td>(confidence to tackle unfamiliar problems)</td>
</tr>
<tr>
<td>Cultural understanding (value the perspectives of others)</td>
<td>Professional Skills (work independently and as a team)</td>
</tr>
</tbody>
</table>

Find out more about Curtin's Graduate attributes at the Office of Teaching & Learning website: ctl.curtin.edu.au

Learning Activities
There will be 1 quiz and 1 assignment for the course.
Faculty of Science and Engineering
Department of Mathematics and Statistics

Learning Resources

Essential texts

The required textbook(s) for this unit are:

- Course Notes for Subject CT5 from the Institute of Actuaries, published by the ActEd Company (please contact your unit coordinator to purchase the notes)

Online resources

- Lecture Notes
  A Mail Tool to Contact your Lecturer, Tutor or Fellow Students.
  LMS (Blackboard): Support Materials will be under Unit Materials. It will also be used for discussions and electronic correspondence.
  [http://lms.curtin.edu.au](http://lms.curtin.edu.au)
Assessment schedule

<table>
<thead>
<tr>
<th>Task</th>
<th>Value %</th>
<th>Date Due</th>
<th>Unit Learning Outcome(s) Assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiz</td>
<td>15 percent</td>
<td>Week: Teaching Week 5 Day: Lecture Day</td>
<td>1</td>
</tr>
<tr>
<td>Assignment</td>
<td>15 percent</td>
<td>Week: Teaching Week 8 Day: Lecture Day</td>
<td>2,3</td>
</tr>
<tr>
<td>Final Examination</td>
<td>70 percent</td>
<td>Week: Exam Period Day: TBA Time: TBA</td>
<td>1,2,3,4,5</td>
</tr>
</tbody>
</table>

Detailed information on assessment tasks

1. Quiz is held during Lecture.
2. Assignment is due by the end of Lecture.
3. Exact date of exam is not known yet.

Pass requirements

Students must get a weighted average of 50 or more to pass.

Fair assessment through moderation

Moderation describes a quality assurance process to ensure that assessments are appropriate to the learning outcomes, and that student work is evaluated consistently by assessors. Minimum standards for the moderation of assessment are described in the Assessment and Student Progression Manual, available from policies.curtin.edu.au/policies/teachingandlearning.cfm

Late assessment policy

This ensures that the requirements for submission of assignments and other work to be assessed are fair, transparent, equitable, and that penalties are consistently applied.

1. All assessments students are required to submit will have a due date and time specified on this Unit Outline.
2. Late submission of assessments is not accepted in this unit. Students will receive a zero mark for any assessment item submitted late.

Assessment extension

A student unable to complete an assessment task by/on the original published date/time (eg examinations, tests) or due date/time (eg assignments) must apply for an assessment extension using the Assessment Extension form (available from the Forms page at students.curtin.edu.au/administration/) as prescribed by the Academic Registrar. It is the responsibility of the student to demonstrate and provide evidence for exceptional circumstances beyond the student’s control that prevent them from completing/submitting the assessment task.

The student will be expected to lodge the form and supporting documentation with the unit coordinator before the assessment date/time or due date/time. An application may be accepted up to five working days after the date or due date of the assessment task where the student is able to provide an acceptable explanation as to why he or she was not able to submit the application prior to the assessment date. An application for an assessment extension will not be accepted after the date of the Board of Examiners’ meeting.

Deferred assessments

If your results show that you have been granted a deferred assessment you should immediately check your OASIS email for details.

Deferred examinations/tests will be held from 14/07/2016 to 14/07/2016. Notification to students will be made after the Board of Examiners’ meeting via the Official Communications Channel (OCC) in OASIS.

Supplementary assessments
Supplementary assessments, if granted by the Board of Examiners, will have a due date or be held between 14/07/2016 and 14/07/2016. Notification to students will be made after the Board of Examiners’ meeting via the Official Communications Channel (OCC) in OASIS.

It is the responsibility of students to be available to complete the requirements of a supplementary assessment. If your results show that you have been granted a supplementary assessment you should immediately check your OASIS email for details.

Referencing style

The referencing style for this unit is Chicago. More information can be found on this style from the Library web site: http://libguides.library.curtin.edu.au/referencing.

Academic Integrity (including plagiarism and cheating)

Any conduct by a student that is dishonest or unfair in connection with any academic work is considered to be academic misconduct. Plagiarism and cheating are serious offences that will be investigated and may result in penalties such as reduced or zero grades, annulled units or even termination from the course.

Plagiarism occurs when work or property of another person is presented as one's own, without appropriate acknowledgement or referencing. Submitting work which has been produced by someone else (e.g. allowing or contracting another person to do the work for which you claim authorship) is also plagiarism. Submitted work is subjected to a plagiarism detection process, which may include the use of text matching systems or interviews with students to determine authorship.

Cheating includes (but is not limited to) asking or paying someone to complete an assessment task for you or any use of unauthorised materials or assistance during an examination or test.

For more information, including student guidelines for avoiding plagiarism, refer to the Academic Integrity tab in Blackboard or academicintegrity.curtin.edu.au.

Information and Communications Technology (ICT) Expectations

Curtin students are expected to have reliable internet access in order to connect to OASIS email and learning systems such as Blackboard and Library Services.

You may also require a computer or mobile device for preparing and submitting your work.

For general ICT assistance, in the first instance please contact OASIS Student Support: oasisapps.curtin.edu.au/help/general/support.cfm

For specific assistance with any of the items listed below, please contact The Learning Centre: life.curtin.edu.au/learning-support/learning_centre.htm

- Using Blackboard, the I Drive and Back-Up files
- Introduction to PowerPoint, Word and Excel
**Additional information**

You will be permitted to use any of the following calculators in the assignments and final examination provided sufficient working of intermediate steps is shown:

- Casio FX82, FX83 or FX85 (with or without any suffix)
- Hewlett Packard HP 12C (with or without any suffix)
- Sharp EL531 (with or without any suffix)
- Texas Instruments BAII Plus, TI-30 (with or without any suffix)

Students who attempt to bring a calculator which has not been approved by the Lecturer in Charge into the examinations may find they are not allowed to use the calculator in the examinations.

Further information on the approved calculators can be found on the UK Institute of Actuaries website [www.actuaries.org.uk](http://www.actuaries.org.uk). It is helpful, but not essential, that you have access to a computer with an Internet connection. You can access the computing facilities on campus if you do not have a computer at home.

**Enrolment**

It is your responsibility to ensure that your enrolment is correct - you can check your enrolment through the eStudent option on OASIS, where you can also print an Enrolment Advice.

**Student Rights and Responsibilities**

It is the responsibility of every student to be aware of all relevant legislation, policies and procedures relating to their rights and responsibilities as a student. These include:

- the Student Charter
- the University's Guiding Ethical Principles
- the University's policy and statements on plagiarism and academic integrity
- copyright principles and responsibilities
- the University’s policies on appropriate use of software and computer facilities

Information on all these things is available through the University's "Student Rights and Responsibilities" website at: [students.curtin.edu.au/rights](http://students.curtin.edu.au/rights).

**Student Equity**

There are a number of factors that might disadvantage some students from participating in their studies or assessments to the best of their ability, under standard conditions. These factors may include a disability or medical condition (e.g. mental illness, chronic illness, physical or sensory disability, learning disability), significant family responsibilities, pregnancy, religious practices, living in a remote location or another reason. If you believe you may be unfairly disadvantaged on these or other grounds please contact Student Equity at [eesj@curtin.edu.au](mailto:eesj@curtin.edu.au) or go to [http://eesj.curtin.edu.au/student_equity/index.cfm](http://eesj.curtin.edu.au/student_equity/index.cfm) for more information.


It is important to note that the staff of the university may not be able to meet your needs if they are not informed of your individual circumstances so please get in touch with the appropriate service if you require assistance. For general wellbeing concerns or advice please contact Curtin's Student Wellbeing Advisory Service at: [http://life.curtin.edu.au/health-and-wellbeing/student_wellbeing_service.htm](http://life.curtin.edu.au/health-and-wellbeing/student_wellbeing_service.htm)
Recent unit changes

Students are encouraged to provide unit feedback through eVALUate, Curtin’s online student feedback system. For more information about eVALUate, please refer to evaluate.curtin.edu.au/info/.

To view previous student feedback about this unit, search for the Unit Summary Report at https://evaluate.curtin.edu.au/student/unit_search.cfm. See https://evaluate.curtin.edu.au/info/dates.cfm to find out when you can eVALUate this unit.

Recent changes to this unit include:

Nil
<table>
<thead>
<tr>
<th>Week</th>
<th>Begin Date</th>
<th>Lecture/Seminar</th>
<th>Pre-readings</th>
<th>Tutorial/Other</th>
<th>Assessment Due</th>
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</thead>
<tbody>
<tr>
<td>Orientation</td>
<td>22 February</td>
<td></td>
<td>Orientation Week</td>
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<tr>
<td>1.</td>
<td>29 February</td>
<td>Life Assurance Contracts</td>
<td>ActEd Ch 1, 3</td>
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<td>2.</td>
<td>7 March</td>
<td>Life Assurance Contracts</td>
<td>ActEd Ch 1, 3</td>
<td></td>
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<td>3.</td>
<td>14 March</td>
<td>Life Annuity Contracts</td>
<td>ActEd Ch 2</td>
<td>Tutorial 1&amp;2</td>
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<td>4.</td>
<td>21 March</td>
<td>The Life Table</td>
<td>ActEd Ch 3</td>
<td>Tutorial 1&amp;2</td>
<td></td>
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<td>5.</td>
<td>28 March</td>
<td></td>
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<td>Tuition Free Week</td>
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<td>6.</td>
<td>4 April</td>
<td>Evaluation of Assurances &amp; Annuities</td>
<td>ActEd Ch 4</td>
<td>Tutorial 3</td>
<td>Quiz</td>
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<tr>
<td>7.</td>
<td>11 April</td>
<td>Variable Benefits &amp; With-Profits Policies</td>
<td>ActEd Ch 6</td>
<td>Tutorial 4</td>
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<td>8.</td>
<td>18 April</td>
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<td>Tuition Free Week</td>
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<td>9.</td>
<td>25 April</td>
<td>Commutation Functions</td>
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<td>10.</td>
<td>2 May</td>
<td>Net Premiums &amp; Reserves</td>
<td>ActEd Ch 5, 6</td>
<td></td>
<td>Assignment</td>
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<tr>
<td>11.</td>
<td>9 May</td>
<td>Net Premiums &amp; Reserves</td>
<td>ActEd Ch 5, 6</td>
<td>Tutorial 7</td>
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<td>12.</td>
<td>16 May</td>
<td>Gross Premiums &amp; Reserves</td>
<td>ActEd Ch 7</td>
<td>Tutorial 7</td>
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<tr>
<td>13.</td>
<td>23 May</td>
<td>Gross Premiums &amp; Reserves</td>
<td>ActEd Ch 7</td>
<td>Tutorial 8</td>
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<tr>
<td>14.</td>
<td>30 May</td>
<td>Revision</td>
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<td>15.</td>
<td>6 June</td>
<td></td>
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<td>Study Week</td>
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<td>16.</td>
<td>13 June</td>
<td></td>
<td></td>
<td>Examinations</td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>20 June</td>
<td></td>
<td></td>
<td>Examinations</td>
<td></td>
</tr>
</tbody>
</table>