ACST860

Contingent Payments 2

S2 Day 2017

Dept of Applied Finance and Actuarial Studies

Contents

Disclaimer

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General Information

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Friday 3-4pm during teaching weeks or by appointment

Lecturer
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Tuesdays 1400–1600 during teaching weeks

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Credit points
4

Prerequisites
ACST859

Corequisites

Co-badged status

Unit description
Topics covered in this unit include: - multiple decrement models; - valuation of benefits and contributions under superannuation plans; - pricing and valuation of policies involving two lives; - cash flow and profit test models for life insurance products including traditional products, unbundled unit linked contracts and disability income products; - pricing and valuation for future contingent liabilities; and - the effect of the pricing and valuation basis on the emergence of profit. Students gaining a grade of credit or higher in both ACST859 and this unit may apply for exemption from subject CT5 of the professional exams of the Institute of Actuaries of Australia.

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:

Extend the techniques learned in ACST859 to permit the calculation and analysis of cashflows dependent upon the death or survival of either or both of two lives, and cashflows dependent upon a fixed term as well as age.

Describe, develop, apply and analyse methods used to model cashflows contingent upon competing risks; construct and use multiple decrement service tables, and demonstrate understanding of the relationship with associated single decrement tables.

Describe, apply and analyse the technique of discounted emerging costs for use in pricing, reserving and assessing profitability, for superannuation funds and related multiple decrement tables, traditional life insurance contracts and unit linked policies.

Define, describe and illustrate the principal forms of heterogeneity within a population and the ways in which selection can occur; define, calculate and analyse the use of various single figure indices, explain the rationale behind the indices, and explain the advantages and disadvantages of the indices for summarising and comparing actual experience in different scenarios.

Demonstrate the ability to identify key unit concepts and to integrate them to solve, create and analyse novel problems. Appy this skill to both develop and solve a number of high quality multiple choice 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 disruption to studies 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
Assessed Coursework	5%	No	23 August & 20 October
Mid-Semester Exam	20%	No	13 September
Assignment	15%	No	1 November
Final Examination	60%	No	University Examination Period

Assessed Coursework

Due: **23 August & 20 October**
Weighting: **5%**

The online quiz will cover Sections 1 to 3. The quiz is due on 23 August (Wednesday of week 4) 11:55pm, to be submitted online via the iLearn site.

Please use the quiz as an indicator of whether you are progressing satisfactorily in the unit. If you are having difficulties, please see the Unit Convenor and consider withdrawing before the census date on Friday of week 4. Note that the quiz carries a weight of 0%.

In addition, ACST860 students are required to complete PeerWise tasks worth a total of 5% via:

- creating 4 multiple choice questions (worth 3%);
- attempting and grading at least 25 PeerWise questions written by others (worth 2%)

both of which are due by 20 October (Friday of week 10). Further details will be provided in class.

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 disruptions to studies is made and approved.

On successful completion you will be able to:
- Extend the techniques learned in ACST859 to permit the calculation and analysis of cashflows dependent upon the death or survival of either or both of two lives, and cashflows dependent upon a fixed term as well as age.
- Describe, develop, apply and analyse methods used to model cashflows contingent upon competing risks; construct and use multiple decrement service tables, and

demonstrate understanding of the relationship with associated single decrement tables.

- Describe, apply and analyse the technique of discounted emerging costs for use in pricing, reserving and assessing profitability, for superannuation funds and related multiple decrement tables, traditional life insurance contracts and unit linked policies.
- Demonstrate the ability to identify key unit concepts and to integrate them to solve, create and analyse novel problems. Appy this skill to both develop and solve a number of high quality multiple choice problems.

Mid-Semester Exam

Due: **13 September**
Weighting: **20%**

The mid-semester exam will be a two-hour written papers with no reading time, held during the lecture time. It will cover Sections 1 to 5.

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 to you at the end of the final examination.

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 disruptions to studies is made and approved.

On successful completion you will be able to:
- Extend the techniques learned in ACST859 to permit the calculation and analysis of cashflows dependent upon the death or survival of either or both of two lives, and cashflows dependent upon a fixed term as well as age.
- Describe, develop, apply and analyse methods used to model cashflows contingent upon competing risks; construct and use multiple decrement service tables, and demonstrate understanding of the relationship with associated single decrement tables.
- Demonstrate the ability to identify key unit concepts and to integrate them to solve, create and analyse novel problems. Appy this skill to both develop and solve a number of high quality multiple choice problems.

Assignment

Due: **1 November**
Weighting: **15%**

The assignment will cover Sections 7 to 9 and is to be submitted via both the iLearn site and ACST860 Assignment Box in BESS.

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.

On successful completion you will be able to:

- Extend the techniques learned in ACST859 to permit the calculation and analysis of cashflows dependent upon the death or survival of either or both of two lives, and cashflows dependent upon a fixed term as well as age.
- Describe, apply and analyse the technique of discounted emerging costs for use in pricing, reserving and assessing profitability, for superannuation funds and related multiple decrement tables, traditional life insurance contracts and unit linked policies.
- Demonstrate the ability to identify key unit concepts and to integrate them to solve, create and analyse novel problems. Appy this skill to both develop and solve a number of high quality multiple choice problems.

Final Examination

Due: **University Examination Period**
Weighting: **60%**

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

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 to you at the end of the final examination.

On successful completion you will be able to:

- Extend the techniques learned in ACST859 to permit the calculation and analysis of cashflows dependent upon the death or survival of either or both of two lives, and cashflows dependent upon a fixed term as well as age.
- Describe, develop, apply and analyse methods used to model cashflows contingent upon competing risks; construct and use multiple decrement service tables, and demonstrate understanding of the relationship with associated single decrement tables.
- Describe, apply and analyse the technique of discounted emerging costs for use in pricing, reserving and assessing profitability, for superannuation funds and related multiple decrement tables, traditional life insurance contracts and unit linked policies.
- Define, describe and illustrate the principal forms of heterogeneity within a population and the ways in which selection can occur; define, calculate and analyse the use of various single figure indices, explain the rationale behind the indices, and explain the

advantages and disadvantages of the indices for summarising and comparing actual experience in different scenarios.

- Demonstrate the ability to identify key unit concepts and to integrate them to solve, create and analyse novel problems. Appy this skill to both develop and solve a number of high quality multiple choice problems.

Delivery and Resources

Classes

The timetables for classes can be found on the University website at: https://timetables.mq.edu.au/2017/. Tutorials commence in week 2 of the session. All lecture classes for weeks 8, 9 and 10 will be held in the computer labs (specific locations will be advised on iLearn announcements in week 1 of session).

Required and recommended texts and / or materials

Optional text. Detailed lecture materials are provided and it is not envisaged that you will require a text.

Lecture handouts. Lecture handouts are available for downloading from the website in advance of lecture classes. Print these and bring them to the relevant lecture. It is expected that you will have these notes in all lectures.

Tables. The Formulae and Tables for Actuarial Examinations book is not required for this unit, and will not be provided in the examination. Instead, you will be asked to generate your own set of tables, based on up-to-date UK mortality tables. There will be Tables Tasks exercises set in the early weeks of the unit that will give you details of how to construct the tables and provide results to spot check your answers. In addition to generating results for your future use, the aim of these tasks is to help you to revise relevant results from ACST255/859. It is important that you keep up-to-date with the Tables Tasks so that you can use your tables to answer questions throughout this unit.

Technology used and required

You will be required to use the iLearn site, Excel and Word.

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.

Teaching and learning activities

Lectures. The unit material is covered in the three hours of lectures each week.

Tutorials. The tutorial is an opportunity for you to discuss the exercises available for each section of work with your tutor.

Computer lab classes. These will replace all of the lecture classes in weeks 8, 9 and 10.

Material to bring to classes. You are expected to bring to all classes the relevant lecture handout printout for the current and previous weeks, blank paper to complete exercises, a calculator, and your completed Tables Tasks.

Unit Schedule

Week	Wednesday Lecture	Frida Lecture	Tutorials	Assessment
	Section 1: Joint life and last survivor statuses	Section 2: Simple annuities and assurances involving two lives	No tutorial	-
	Section 2 (cont)	Section 3: Contingent and reversionary benefits	Sections 1 and 2	-
	Section 3 (cont)	Section 4: Competing risks	Section 3	-
	Section 4 (cont)	Section 5: Multiple decrement tables	Section 4	Online Quiz
	Section 5 (cont)	Section 6: Superannuation funds	Section 5	-
	Section 6 (cont)	Section 6 (cont)	Revision	-
	Mid-semester Exam	No class	No tutorial	Mid-semester Exam
	MID-SEMESTER STUDY BREAK			
	MID-SEMESTER STUDY BREAK			
	Section 7: Profit testing - conventional business (in labs)	Section 7 (cont)	Section 6	-
	Section 8: Profit testing - unit-linked business (in labs)	Section 8 (cont)	Section 7	-
	Profit testing revision (in labs)	Profit testing revision (cont)	Section 8	-
	Section 9: Mortality risk factors and selection	Section 9 (cont)	No tutorial	-
	Section 10: Mortality indices	Section 10 (cont)	Section 9	Assignment
	Revision	Revision and exam information	Section 10	-

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_2016.html

Grade Appeal Policy http://mq.edu.au/policy/docs/gradeappeal/policy.html

Complaint Management Procedure for Students and Members of the Public http://www.mq.edu.au/policy/docs/complaint_management/procedure.html

Disruption to Studies Policy (in effect until Dec 4th, 2017): http://www.mq.edu.au/policy/docs/disruption_studies/policy.html

Special Consideration Policy (in effect from Dec 4th, 2017): https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration

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

Information regarding supplementary exams, including dates, is available at:

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

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://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

- Extend the techniques learned in ACST859 to permit the calculation and analysis of cashflows dependent upon the death or survival of either or both of two lives, and cashflows dependent upon a fixed term as well as age.
- Describe, develop, apply and analyse methods used to model cashflows contingent upon competing risks; construct and use multiple decrement service tables, and demonstrate understanding of the relationship with associated single decrement tables.
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experience in different scenarios.

- Demonstrate the ability to identify key unit concepts and to integrate them to solve, create and analyse novel problems. Appy this skill to both develop and solve a number of high quality multiple choice problems.

Assessment tasks

- Assessed Coursework
- Mid-Semester Exam
- Assignment
- 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

- Extend the techniques learned in ACST859 to permit the calculation and analysis of cashflows dependent upon the death or survival of either or both of two lives, and cashflows dependent upon a fixed term as well as age.
- Describe, develop, apply and analyse methods used to model cashflows contingent upon competing risks; construct and use multiple decrement service tables, and demonstrate understanding of the relationship with associated single decrement tables.
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- Demonstrate the ability to identify key unit concepts and to integrate them to solve, create and analyse novel problems. Appy this skill to both develop and solve a number of high quality multiple choice problems.

Assessment tasks

- Assessed Coursework
- Mid-Semester Exam
- Assignment
- 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

- Extend the techniques learned in ACST859 to permit the calculation and analysis of cashflows dependent upon the death or survival of either or both of two lives, and cashflows dependent upon a fixed term as well as age.
- Describe, develop, apply and analyse methods used to model cashflows contingent upon competing risks; construct and use multiple decrement service tables, and demonstrate understanding of the relationship with associated single decrement tables.
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Assessment tasks

- Assessed Coursework
- Mid-Semester Exam
- Assignment
- Final Examination

Changes from Previous Offering

There have been minor changes to the assessment structure.

Research and Practice

This unit uses research by Macquarie University researchers, as well as from other Australian and international researchers (references are given in the unit notes).

You are also required to source and use Australian and international research as part of the assignment in this unit.