



ACST152

Introduction to Actuarial Studies

S1 Day 2014

Applied Finance and Actuarial Studies

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General Information

Unit convenor and teaching staff

Unit Convenor

Shauna Ferris

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e4a 617

Wednesday 3 pm to 6 pm

Tutor

Alyse Kim

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Credit points

3

Prerequisites

Admission to BActStud or (18cp and GPA of 3.25)

Corequisites

STAT171

Co-badged status

Unit description

This unit provides an introduction to the important underlying aspects of actuarial work. We look at the development of actuarial techniques in the context of life insurance, general insurance, superannuation, and investment. The aim is to develop problem-solving skills and give students some of the basic tools for risk management and financial modelling. The unit shows how studies in related disciplines (such as accounting, demography, economics, statistics, computing and mathematics) are essential to the education of an actuary. The unit works through the control cycle approach to insurance: business objectives, product design, risk assessment, modelling of insurance and financial risks (including claim frequency and claim size of individual claims and on a portfolio basis), pricing, reserving, investment and asset liability matching, claims management, legal requirements, solvency, profitability and responding to experience. This unit is relevant for students who want to become actuaries or risk managers. Students are assumed to have studied mathematics in high school up to at least HSC Extension 1 level or equivalent.

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 the way the actuarial control cycle is used to identify and manage financial risks

Be able to build simple cash flow models which can be used for decision making. Be able to implement these in Excel or using other software

Be able to apply statistical models (including models based on the Binomial, Poisson, or Normal distributions) to price policies and determine ruin probabilities. Be able to implement simulation models in Excel or using other software.

Be able to explain why legislation, accounting standards, codes of conduct, and professional requirements are necessary. Explain how the business environment affects the management of the financial services business.

Understand the tools which can be used to manage risk, including the impact of diversification and leverage; capital; risk pooling and risk transfer.

Assessment Tasks

Name	Weighting	Due
Quizzes	8%	Fridays 5 pm
Assignment	12%	May 2 and May 30
Class Test	20%	Friday May 16
Final Exam	60%	During University Exam Period

Quizzes

Due: **Fridays 5 pm**

Weighting: **8%**

Students will be asked to do online quiz questions on a weekly basis, via iLearn. The quizzes will help students to keep up to date with the course material covered in lectures and tutorials. The schedule of quiz due dates will be shown on iLearn. Each quiz will be due on Friday at 5 pm, with the first quiz due on Friday March 14 (week 3). There is no quiz in week 9 because there is a class test in that week. The 8 best tests will be counted for assessment purposes. No

extensions will be granted. Students who have not submitted a task prior to the deadline will be awarded a mark of 0, unless the student has applied for Special Consideration and the request has been approved.

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- Be able to explain why legislation, accounting standards, codes of conduct, and professional requirements are necessary. Explain how the business environment affects the management of the financial services business.
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Assignment

Due: **May 2 and May 30**

Weighting: **12%**

Students will be asked to undertake a project which will require model-building and research, and write a report on their work. The first part of this task will require model-building and this will be due on Friday May 2. The second part of this task will require research and report-writing and this will be due on Friday May 30

No extensions will be granted. Late tasks will be accepted up to 72 hours after the submission deadline. 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 special consideration is made and approved.

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Class Test

Due: **Friday May 16**

Weighting: **20%**

The test will be approximately 75 minutes with 10 minutes reading time. The test will be held during the normal lecture time in week 9 (Friday May 16). Students should bring a non programmable calculator to the test (no text retrieval capability). Students who do not attempt the test will be awarded a mark of 0 for this task, except in cases where an application for special consideration has been made and is approved.

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Final Exam

Due: **During University Exam Period**

Weighting: **60%**

The exam will be three hours plus ten minutes reading time. The exam will be held during the University Examination period for semester 1 - between Tuesday 11 June and Friday June 28. The examination timetable will be posted on the University website later in the term. Students will be allowed to use a no-programmable calculator during the examination (The calculator must not

have text retrieval capability). The Macquarie University examination policy describes the principles and conduct of examinations at the University. This policy is available at <http://www.mq.edu.au/docs/examination/policy.htm>

In order to be eligible for a passing grade in this unit, you must pass the final exam.

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Delivery and Resources

CLASSES

The timetable for classes can be found on the University web site at: <http://www.timetables.mq.edu.au/>. This timetable shows the class times and locations.

- Lectures : 2 hours per week
Friday 3 pm to 5 pm in W5A T2
Please bring a calculator so that you can attempt some exercises.
Be prepared to share your ideas.
- Tutorials : 1 hour per week (You should enrol in one of the tutorial groups shown below)
Tutorial Groups
 - Friday 10 am in E8A 386
 - Friday 10 am in W6B 350
 - Friday 1 pm in X5B 136

- Friday 1 pm in W6B 354

Note that rooms may change - any changes will be announced on iLearn.

There are no tutorials in week 1.

Tutorial questions will be posted on iLearn each week. Please attempt the tute questions BEFORE the class, so that you can ask your tutor if you need help.

Students may request a change of tutorial time if there is a good reason (e.g. you have a part time job which clashes with your assigned tutorial).

iLEARN

• The course notes, readings, tutorial questions, tutorial solutions, and sample exams for this unit will be posted on the iLearn system. There will be a separate folder for each week.

* If you have any personal questions, then you can send Shauna a message via the Dialogue Module. For example, if you are sick and you need Special Consideration, or you want to switch tutes, send a message via the Dialogue.

* If you have any general questions about the unit, you can post a message under General Discussion. This is a public noticeboard: all the students and staff can see your message.

* Students are encouraged to help each other. If you notice that one of your colleagues has posted a question, and you think you know the answer, you may post a reply. You are encouraged to help each other with tute questions; but you should NOT share the answers to quiz questions. The quiz questions are good preparation for the class test and exam, so it is better if you try to do these yourself.

* If you have any helpful suggestions for how to improve the course, please feel free to send Shauna a message via the Dialogue.

* Prizes are awarded to students who make positive contributions to the class.

* We aim to record the lectures and make these recordings available via iLearn. However sometimes there are technical hitches, so we cannot guarantee that these recordings will always be available. We do NOT recommend skipping lectures and relying on listening to all the recordings the night before the class test.

* We will also be posting some Audio-visual recordings which will demonstrate Excel skills. You can play these back at home to work through EXCEL exercises step by step.

* From time to time we might need to make an announcement to the whole class (e.g. if a tutorial is moved to a different room or there is a scholarship available). The announcements will appear on iLearn, and you will also be sent an email to your Uni email address. Please look at your email regularly - at least once a week.

Consultation times

One of the tutors will hold consultation hours every week in E4B 104. If you want extra help with any of the course material, please attend the Tutor's consultation sessions in E4B104. The times will be notified via an Announcement.

Shauna Ferris will be available for consultation on Wednesday afternoon between 3 pm and 5 pm.

Students experiencing significant difficulties with any topic in the unit should seek assistance as soon as possible. We are happy to help you. Students who enter this course come from a range of different backgrounds and naturally some students will have a bit of catching up to do. Some students will already have good computer skills from high school, others will already know a bit about economics, and so on - each student will have different strengths and weaknesses. Don't be afraid to ask for help!

Resources

Students should bring a calculator to classes (lectures and tutorials). Students should bring a calculator to the class test and to the final exam. The calculator should be non-programmable and should not have the ability to store and retrieve text.

We will be using the iLearn system, so it would be helpful if students have a computer and access to the Internet. Students can also use the University's computer labs.

We will be using computer software (such as Excel and R) to develop some financial models. R is open-source software and can be downloaded at no cost (we will provide instructions).

Changes for 2014

We have changed some of the course material to reflect recent developments in the financial system; and added additional computer exercises.

Unit Schedule

OUTLINE OF TOPICS FOR ACST152

Week	Date	
1	March 7	Introduction: The Actuarial Control Cycle
2	March 14	Savings and Retirement Models / Simple Deterministic Model
3	March 21	Savings and Retirement Models / Advanced Deterministic Model
4	March 28	Savings and Retirement Models / Stochastic Investment Model & Risk Management

5	April 4	Life Tables and Contingent Payments
6	April 11	Life Insurance Introduction / Simple One Year Policies / Risk Management
break		
break		
7	May 2	Life Insurance Introduction / Multiple Year Policies
8	May 9	Life Insurance Legislation / Prudential Regulation & Market Conduct
9	May 16	Class Test
10	May 23	Risk Classification & Underwriting
11	May 30	General Insurance / Pricing
12	June 6	General Insurance / Reserving
13	June 13	Revision

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/

Supplementary Examinations Policy - please refer to http://www.businessandconomics.mq.edu.au/current_students/undergraduate/how_do_i/special_consideration

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

Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

Learning outcomes

- Be able to build simple cash flow models which can be used for decision making. Be able to implement these in Excel or using other software
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- Understand the tools which can be used to manage risk, including the impact of diversification and leverage; capital; risk pooling and risk transfer.

Assessment tasks

- Quizzes
- Assignment
- Class Test
- Final Exam

Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

Learning outcomes

- Be able to build simple cash flow models which can be used for decision making. Be able to implement these in Excel or using other software
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Assessment tasks

- Quizzes
- Assignment
- Class Test
- Final Exam

Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

Learning outcomes

- Understand the way the actuarial control cycle is used to identify and manage financial risks
- Be able to explain why legislation, accounting standards, codes of conduct, and professional requirements are necessary. Explain how the business environment affects the management of the financial services business.

Assessment tasks

- Quizzes
- Assignment
- Class Test
- Final Exam

Research and Practice

- This unit uses research from a range of sources. References for given topics will be available on the iLearn system.
- This unit gives you opportunities to conduct your own research