ACST1052

Introduction to Actuarial Studies

Session 1, In person/Online-scheduled-weekday, North Ryde 2022

Department of Actuarial Studies and Business Analytics

Contents

General Information

Unit convenor and teaching staff
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Credit points
10

Prerequisites
Admission to BActStud or BActStudBSc or BAppFinBActStud or BActStudBProfPrac or
BActStudProfPrac(Hons)

Corequisites
STAT1371

Co-badged status

Unit description
This unit provides an introduction to the important underlying aspects of actuarial work. It
looks at the development of actuarial techniques in the context of life insurance, general
insurance, superannuation, and investment. The aim is to develop problem-solving and
communication 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:

ULO1: Comprehend how the actuarial control cycle is used to identify and manage financial risks.

ULO2: Construct simple cash flow models which can be used for decision making and implement these in Excel or other softwares.

ULO3: Apply demographic data and statistical models to price policies, determine ruin probabilities and implement simulation models in Excel or other softwares.

ULO4: Explain why legislation, accounting standards, codes of conduct, and professional requirements are necessary and how the business environment affects the management of the financial services business.

ULO5: Identify and discuss the tools which can be used to manage risk, including the impact of diversification and leverage, capital, risk pooling and risk transfer.

General Assessment Information

Assessment criteria for all assessment tasks will be provided on the unit iLearn site.

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.

Late submissions of assessments Unless a Special Consideration request has been submitted and approved, no extensions will be granted. There will be a deduction of 10% of the total available assessment-task marks made from the total awarded mark for each 24-hour period or part thereof that the submission is late. Late submissions will only be accepted up to 96 hours after the due date and time.

No late submissions will be accepted for timed assessments – e.g., quizzes, online tests.

Table 1: Penalty calculation based on submission time

Submission time after the due date (including weekends)	Penalty (% of available assessment task mark)	Example: for a non-timed assessment task marked out of 30
< 24 hours	10%	10% x 30 marks = 3-mark deduction
24-48 hours	20%	20% x 30 marks = 6-mark deduction
48-72 hours	30%	30% x 30 marks = 9-mark deduction
72-96 hours	40%	40% x 30 marks = 12-mark deduction
> 96 hours	100%	Assignment won't be accepted

Special Consideration

To request an extension on the due date/time for a timed or non-timed assessment task, you must submit a Special Consideration application. An application for Special Consideration does not guarantee approval.

The approved extension date for a student becomes the new due date for that student. The late submission penalties above then apply as of the new due date.

Assessment Tasks

Name	Weighting	Hurdle	Due
Online Quizzes	8%	No	In most weeks, due Sunday 11:59pm
Class Test	20%	No	Week 6
Assignment	12%	No	Week 11
Final Exam	60%	No	University Exam Period

Online Quizzes

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 10 hours
Due: **In most weeks, due Sunday 11:59pm**
Weighting: **8%**

Online quizzes will be held weekly.

On successful completion you will be able to:
- Comprehend how the actuarial control cycle is used to identify and manage financial risks.
- Construct simple cash flow models which can be used for decision making and implement these in Excel or other softwares.
- Apply demographic data and statistical models to price policies, determine ruin probabilities and implement simulation models in Excel or other softwares.
- Explain why legislation, accounting standards, codes of conduct, and professional requirements are necessary and how the business environment affects the management of the financial services business.
- Identify and discuss the tools which can be used to manage risk, including the impact of diversification and leverage, capital, risk pooling and risk transfer.

Class Test

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 10 hours
Due: **Week 6**
Weighting: **20%**

The test will be approximately 90 minutes with 10 minutes reading time, to be held during class time.

On successful completion you will be able to:
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- Apply demographic data and statistical models to price policies, determine ruin probabilities and implement simulation models in Excel or other softwares.
- Explain why legislation, accounting standards, codes of conduct, and professional requirements are necessary and how the business environment affects the management of the financial services business.
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Assignment

Assessment Type [1]: Quantitative analysis task
Indicative Time on Task [2]: 15 hours
Due: **Week 11**
Weighting: **12%**

Students will be asked to undertake a project which will include a numerical component (using a spreadsheet) and a written component.

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- Apply demographic data and statistical models to price policies, determine ruin probabilities and implement simulation models in Excel or other softwares.
- Explain why legislation, accounting standards, codes of conduct, and professional requirements are necessary and how the business environment affects the management of the financial services business.
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Final Exam

Assessment Type [1]: Examination
Indicative Time on Task [2]: 28 hours
Due: **University Exam Period**
Weighting: **60%**

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

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[1] If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment

- the Writing Centre for academic skills support.

[2] Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

Information about Classes and Course Material

The timetable for classes can be found on the University web site at http://www.timetables.mq.edu.au/2022. This timetable shows the class times and locations.

Lectures : Face to Face, 2 hours per week

Please bring a calculator so that you can attempt some exercises during class. Be prepared to share your ideas. If you are unable to attend the lecture, it will be recorded and made available to you after the class is held.

Tutorials : Online or Face-to-Face, 1 hour per week

There are number of tutorial slots available and you should enrol in one of the tutorial groups shown on the timetable. In tutorials, we will work through some examples of actuarial problems. 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. Note that the tutorial exercises provide excellent preparation for the class test and final exam.

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

Consultation hours

Sometimes, you may want extra help in understanding the course material. Consultations with the tutor/lecturer will be provided and details will be posted to iLearn. Consultations provide an excellent method for students to clarify any questions that they may have and it is highly suggested that students take advantage of this resource.

Announcements

Note that rooms and times for tutorials may change depending on the number of students enrolling in both ACST1052 and in other units across the University - any changes will be announced in Lectures and on iLearn. Make sure that you regularly check the Announcements on iLearn.

Computer skills.

In this unit students learn how to use EXCEL to build simple financial models and do simulations. We have provided some Camtasia recordings to demonstrate how to build spreadsheets and use common EXCEL functions. These Camtasia recordings are available on iLearn. This material is examinable so students should watch these recordings. The best way to develop computing skills is to attempt sample problems, so please work through the examples in the Camtasia recordings. Some students already have EXCEL skills, but others have not had this opportunity. If you find that you cannot keep up with the EXCEL material, it is recommended that you come to

the consultations for additional assistance.

Course Materials

Lecture materials and course notes will be provided via iLearn. You will not need any other textbooks. The library does have some actuarial textbooks which may be useful as a source of additional practice problems (references will be posted on iLearn).

Each week (after week 1) tutorial problems and solutions will be posted on iLearn.

In most weeks, you will be asked to do an online quiz. The solutions to these quizzes will be posted on iLearn.

Copies of old class tests and exams, with worked solutions, will be made available on iLearn.

Camtasia recordings of Excel tutorials will be available on iLearn.

Technology

Students will need to use computers to access iLearn. Students who do not own a computer can use the University's PC labs.

The written report may require some research (e.g. using Google Scholar or the library's electronic databases).

Some assignments will require the use of Excel spreadsheets. Most spreadsheet problems can be solved using either the PC version or the Mac version of Excel - however in some cases the Mac version is slightly different. So on some occasions, students who have Macs may need to use the PCs in the University's PC labs.

Students will be encouraged to download and use R software, which is open-source (available for free online).

iLearn

The course notes, readings, recordings, 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.

To find the iLearn page, go to ilearn.mq.edu.au and enter your user name and password. Once you log in, you should see a list of all the units you are enrolled in - and this should include ACST1052 Introduction to Actuarial Studies. Click on the unit name to go to the unit's iLearn home page.

- If you have trouble logging in to iLearn or you can't remember your password, ring 9850 HELP or send a question by email to OneHelp@mq.edu.au.

- If you have any personal questions, then you can send Alan a message via iLearn (click on "Send a message"). For example, if you are sick and you need Special Consideration, or you want to switch tutes because you have a timetable clash, send a message to Alan via iLearn "Send a Message". Alternatively, you can also email Alan directly.

- If you have any general questions about the unit, you can post a message under **General Discussion** (which is on iLearn). This is a public noticeboard: all the

students and staff can see your message. For example, if you have a question about one of the assignments, you can post the question here.

- Students are encouraged to help each other. If you notice that one of your colleagues has posted a question on General Discussion, and you think you know the answer, you may post a reply. You are encouraged to help each other with tute questions.

- Please be polite to each other when you post messages on iLearn.

- If you have any helpful suggestions for how to improve the course, please feel free to send Alan a message.

- Important information is often posted on the Announcements in iLearn - for example we might want to tell you about a scholarship, or an ASSOC event, or a room change for a tute. So please read the Announcements, which are sent to your University email.

Unit Schedule

1. Introduction to the Actuarial Control Cycle
2. Savings and Retirement Models
3. Building a Superannuation Savings Model
4. Modelling of Superannuation Risks and Spending
5. Life Tables and Contingent Payments
6. Introduction to Investment Risk
7. More Investment Risk
8. Utility Theory
9. The Actuarial Role in Managing Profitability and Solvency
10. Life Insurance and Ruin Probabilities
11. General Insurance Pricing
12. More General Insurance

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Assessment Procedure

- Complaints Resolution Procedure for Students and Members of the Public

- Special Consideration Policy

Students seeking more policy resources can visit Student Policies (https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit Policy Central (https://policies.mq.edu.au) and use the search tool.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/admin/other-resources/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) 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 or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe academic integrity – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free online writing and maths support, academic skills development and wellbeing consultations.

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

The Writing Centre

The Writing Centre provides resources to develop your English language proficiency, academic writing, and communication skills.

- Workshops

- Chat with a WriteWISE peer writing leader

- Access StudyWISE

- Upload an assignment to Studiosity

- Complete the Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides

- Ask a Librarian

Student Services and Support

Macquarie University offers a range of Student Support Services including:

- IT Support

- Accessibility and disability support with study

- Mental health support

- Safety support to respond to bullying, harassment, sexual harassment and sexual assault

- Social support including information about finances, tenancy and legal issues

Student Enquiries

Got a question? Ask us via AskMQ, or contact Service Connect.

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.