ACST402
Actuarial Control Cycle 1

Semester 1, 2012

Department of Applied Finance and Actuarial Studies
About this Unit

Unit Description

This unit, in conjunction with ACST403 Actuarial Control Cycle 2, develops and applies the actuarial principles and practices underlying the design, assessment, management and control of financial systems in the areas of life insurance, general insurance, superannuation and other less traditional areas of actuarial practice. The two units together consider the process of actuarial and financial management including: product design; pricing; marketing; monitoring of experience; reserve setting; financing; solvency; determination and distribution of surplus; and its role in enterprise risk management. The overall control process is studied within the constraints imposed by the commercial environment and the actuarial professional code of conduct and standards, and includes a discussion of business ethics and issues of professionalism in actuarial practice.

Unit Rationale

You will not be expected to show the same degree of skill and judgement as a qualified actuary. Together with ACC 2, this course unit aims to help you start moving towards that level of professional capability by understanding the “big picture” of actuarial practice – how the mathematical and statistical techniques for actuarial functions like pricing and reserving fit into the financial management of products, services, funds and organisations.

Professional Exemptions

The Macquarie University units ACST402/831/831X (ACC 1), ACST403/832/832X (ACC 2) and ACST404/871/871X (Part IIB) together count for exemption from the Actuaries Institute Part II subject. You will be recommended for exemption from Part II if you attain grades of Credit or better in these three units. If you attain a Pass in one or more of these units, then the exemption will be recommended if and only if a Standardised Numerical Grade (SNG) of at least 60 is achieved in all three units, and the average SNG is at least 65.

For students who have completed Control Cycle 2 or Part IIB at a different University, each case is considered individually. We may discuss your results with the other university, and under Privacy rules, we will require your prior written permission to do this.
If you have completed Control Cycle 2 or Part IIB previously at a university other than Macquarie, please contact Hong Xie within the first two weeks of the semester.


TEACHING STAFF AND STAFF CONTACT

<table>
<thead>
<tr>
<th>Team Member</th>
<th>Team Role</th>
<th>Room</th>
<th>Telephone</th>
<th>Consultation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leonie Tickle</td>
<td>Unit Convenor / Lecturer</td>
<td>E4A 608</td>
<td>9850 8567</td>
<td>You can contact each team member via the web site</td>
</tr>
<tr>
<td>Peter Carroll</td>
<td>Lecturer</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Bruce Edwards</td>
<td>Lecturer</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Hong Xie</td>
<td>Unit Administrator</td>
<td>E4A 622B</td>
<td>9850 4776</td>
<td></td>
</tr>
</tbody>
</table>

You are encouraged to seek help from a staff member teaching on this unit via the website.

Students experiencing significant difficulties with any topic in the unit must seek assistance immediately.

CLASSES

ACST402 classes are offered on campus at Macquarie University. ACC1 is also taught as part of the unit ACST831, which is also offered via city classes (Sydney CBD) and distance education (students can be located anywhere). All students share a common teaching website.

We believe that the best way we can help you to master the Actuarial Control Cycle subject is not by giving traditional lectures where your role is basically to listen, think and take notes. We have planned the face-to-face classes to be like workshops: a mixture of short “micro-presentations”, small group work, discussions involving the whole class, and individual activities. Most weeks, we will ask you to do some preparatory work – reading, research, writing or just thinking. If you want to get the most out of the classes, do the preparation, and get involved in the classroom work.

Since our classes are not going to be traditional lectures, they will not be recorded using the University’s lecture recording facility (which can be well suited to lectures but not to workshops, discussions and group work). However, in some weeks, the lecturer will make a special downloadable recording which will be available from the website.

The timetable for classes can be found on the University web site at: http://www.timetables.mq.edu.au/

Campus classes will be held:
- Tuesday 8 am – 10 am in E7BT2
- Thursday 11 am – 1 pm in C5C Collaborative Learning Forum

Alterations to the class times or locations will be advised in class and on the ACC 1 web site.
PRIZES

The AMP Prize for Actuarial Control Cycle 1 is awarded for this unit.

REQUIRED AND RECOMMENDED TEXTS AND/OR MATERIALS

Textbook


The textbook can be purchased from the Actuaries Institute, at:
http://www.actuaries.asn.au/Publications/Publication.aspx?id=8

Copies of the book are available in the Reserve section of the Macquarie University library.

Other useful articles will be set out at the beginning of each Learning Guide, and made available on the ACC 1 web site.

Learning Guide

There is a Learning Guide for each section of work. You should read the Learning Guide in advance of the lectures, and bring a copy with you to classes.

TECHNOLOGY USED AND REQUIRED

In this unit, you will need to have access to and to be able to use software to produce overhead slides, software to produce .pdf documents, and word-processing software to produce reports.

UNIT WEB PAGE

Course material is available on the online learning management system (iLearn).

The ACC1 web site is integral to this course unit, whether you are a distance education student or in a face-to-face class. Passive involvement in ACC1 greatly reduces the likelihood of achieving the exemption standard of understanding. Interaction with other students and with teachers is very important, and the web site is the forum for that interaction.

You will need to be accessing the web site regularly to see announcements, read postings and stay informed – we recommend at least every couple of days. The ACC 1 web site entry page is at:
http://ilearn.mq.edu.au.
ASSUMED KNOWLEDGE AND SKILLS

We assume from the start of ACC 1 that you have acquired the knowledge and skills in Subjects CT1 to CT8 of Part I of the Institute of Actuaries of Australia education program.

LEARNING OUTCOMES

On completion of this unit, students should be able to complete the following.

1. Discuss and apply an Actuarial Control Cycle in a variety of practical commercial situations.
2. Interpret and discuss how current economic, social, demographic and economic factors can affect medium- and long-term commercial decisions.
3. Examine the need for, and impact of, regulation and government policy on medium- and long-term financial decisions.
4. Analyse the main features and risks of financial products and contracts from the point of view of consumers and providers.
5. Demonstrate an understanding of enterprise risk management and its role in organisational management.
6. Discuss and apply the process of product design.
7. Select, describe, critically examine, explain and analyse an appropriate model to solve client problems.
8. Discuss the importance of capital, project future levels of capital, identify risks to capital, and demonstrate an understanding of the interaction between risk and capital.
9. Apply appropriate techniques to the pricing of products and contracts.

GRADUATE CAPABILITIES

In addition to the discipline-based learning objectives, all academic programs at Macquarie seek to develop the capabilities the University's graduates will need to develop to address the challenges, and to be effective, engaged participants in their world.

This unit contributes to the development of the following graduate capabilities:

1. Discipline Specific Knowledge and Skills:
   (a) Have an appreciation of the time value of money.
   (d) Understand the use of Expected Present Value as a key concept in many actuarial applications.
   (e) Have skills in fitting and assessing the reliability of statistical models, particularly in the context of financial applications.
2. Critical, Analytical and Integrative Thinking
3. Problem Solving and Research Capability
4. Creative and Innovative
5. Effective Communication
6. Engaged and Ethical Local and Global citizens
7. Socially and Environmentally Active and Responsible
8. Capable of Professional and Personal Judgement and Initiative
9. Commitment to Continuous Learning
**LEARNING AND TEACHING ACTIVITIES**

The unit is taught as set out in the Classes section for face to face classes. The timetable at the end of this Unit Outline sets out the topics covered in each week of the semester.

**RESEARCH AND PRACTICE**

This unit uses research in several ways.
- This unit uses research by Macquarie University researchers (e.g., current and ex Macquarie staff members are editors and authors of the main text and other readings)
- This unit uses research from external sources (references will be provided)
- This unit gives you practice in applying research findings in your assignments

**RELATIONSHIP BETWEEN ASSESSMENT AND LEARNING OUTCOMES**

**Assessment tasks**

<table>
<thead>
<tr>
<th>Task</th>
<th>Weighting</th>
<th>Brief outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textbook chapter tasks</td>
<td>5%</td>
<td>A range of tasks (roughly one for each relevant chapter of UAM), some of which will be graded</td>
</tr>
<tr>
<td>Assignment 1</td>
<td>15%</td>
<td>A report on a topic to be advised</td>
</tr>
<tr>
<td>Assignment 2</td>
<td>5%</td>
<td>Slides and a handout executive summary for a presentation</td>
</tr>
<tr>
<td>Presentation</td>
<td>5%</td>
<td>An oral presentation using the material prepared for Assignment 2</td>
</tr>
<tr>
<td>Reflective writing task</td>
<td>-</td>
<td>A report on your experience of learning in this subject (graded Satisfactory or Not Satisfactory)</td>
</tr>
<tr>
<td>Final exam</td>
<td>70%</td>
<td>A conventional 3-hour written exam</td>
</tr>
</tbody>
</table>

Full details of each assessment task, including submission details, will be given on the ACC 1 website.

The submission dates for the assessment tasks have been spread over the semester, so that you can plan your work accordingly. Although the Reflective Writing Task is not weighted in the assessment, you must have a Satisfactory result on it to pass the unit.

Rescheduling / extensions for in-semester assessment tasks due to illness and other unavoidable disruption is generally not possible. Some allowances may be made if the formal grounds for Special Consideration are met – please see below.
<table>
<thead>
<tr>
<th>Description</th>
<th>Textbook Chapter Tasks</th>
<th>Assignment 1</th>
<th>Assignment 2</th>
<th>Presentation</th>
<th>Reflective Writing Task</th>
<th>Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Due date</td>
<td>Mondays*</td>
<td>8 April</td>
<td>29 April</td>
<td>1, 2 or 3 May</td>
<td>3 June*</td>
<td>12 – 29 June</td>
</tr>
<tr>
<td>% Weighting</td>
<td>5% in total</td>
<td>15%</td>
<td>5%</td>
<td>5%</td>
<td>0% (required)</td>
<td>70%</td>
</tr>
<tr>
<td>Grading method</td>
<td>See task*</td>
<td>See task*</td>
<td>See task*</td>
<td>See task*</td>
<td>See task*</td>
<td>See below</td>
</tr>
<tr>
<td>Submission method</td>
<td>Website</td>
<td>Website</td>
<td>Website</td>
<td>In class</td>
<td>Website</td>
<td>Exam</td>
</tr>
<tr>
<td>Feedback type</td>
<td>Individual mark; class-level feedback*</td>
<td>Individual mark; individual feedback; class-level feedback*</td>
<td>Individual mark; limited individual feedback*</td>
<td>Individual mark</td>
<td>Graded Satisfactory or Not Satisfactory</td>
<td>None</td>
</tr>
<tr>
<td>Feedback location</td>
<td>Website</td>
<td>Website</td>
<td>Website</td>
<td>Website</td>
<td>Website</td>
<td>-</td>
</tr>
<tr>
<td>Estimated student workload (hours)</td>
<td>15</td>
<td>20</td>
<td>10</td>
<td>7</td>
<td>2</td>
<td>35</td>
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<tr>
<td>Learning outcomes assessed</td>
<td>- General, or a mix of the following</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>X</td>
</tr>
<tr>
<td></td>
<td>- Actuarial Control Cycle</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Context</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Regulation</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Enterprise risk management</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Consumer needs</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Product design</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Modelling and data</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Capital</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Pricing</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate capabilities assessed</td>
<td>- Discipline specific knowledge</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>- Critical, analytical, integrative</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>- Problem solving, research</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>- Creative and innovative</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>- Effective communication</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>- Engaged and ethical</td>
<td>X</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>- Socially / environmentally responsible</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Professional and personal judgement</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>- Continuous learning</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* See the assessment task for details  
** See Assessment Tasks Marks and Feedback – What can you expect? on the website.
Examination

A final examination is included as an assessment task for this unit to provide assurance that:

i) the product belongs to the student and
ii) the student has attained the knowledge and skills tested in the exam.

A 3-hour final examination for this unit will be held during the University Examination period. The University Examination period in First Half Year 2012 is from 12 to 29 June. The exam timetable will be available in Draft form approximately eight weeks before the commencement of the examinations and in Final form approximately four weeks before the commencement of the examinations.

http://exams.mq.edu.au/

Local (ie. Sydney-based) students are expected to present themselves for the examination at the time and place designated on the University’s exam timetable. (Distance students should refer to the ACST831 unit outline).

The only exception to not sitting an examination at the designated time is because of documented illness or unavoidable disruption. In these circumstances you may wish to consider applying for Special Consideration. The University's policy on the special consideration process is available at:

http://www.mq.edu.au/policy/docs/special_consideration/policy.html

If a Supplementary Examination is granted as a result of the Special Consideration process the examination will be scheduled after the conclusion of the official examination period.

The Macquarie university examination policy details the principles and conduct of examinations at the University. The policy is available at:

http://www.mq.edu.au/policy/docs/examination/policy.htm

Calculators will be allowed in the final examination but a clear indication of the steps involved in every calculation must be shown. Any machines that have a text-retrieval capacity, specifically those with a full alphabet on the keyboard, are not allowed. Calculators may be checked at the commencement of the examination, and the make/model may be recorded.

Dictionaries are not permitted in the final exam, and no reference materials are allowed to be taken into the final exam.

You should ensure that your handwriting in the final examination is legible. Sections of work that are not legible will not be marked.

ACADEMIC HONESTY

The nature of scholarly endeavour, dependent as it is on the work of others, binds all members of the University community to abide by the principles of academic honesty. Its fundamental principle is that all staff and students act with integrity in the creation, development, application and use of ideas and information.

This means that:

- all academic work claimed as original is the work of the author making the claim
- all academic collaborations are acknowledged
- academic work is not falsified in any way
- when the ideas of others are used, these ideas are acknowledged appropriately.
Further information on the academic honesty can be found in the Macquarie University Academic Honesty Policy at:  
http://www.mq.edu.au/policy/docs/academic_honesty/policy.html

**GRADES**

Macquarie University uses the following grades in coursework units of study:

- HD - High Distinction
- D - Distinction
- CR - Credit
- P - Pass
- F - Fail

Grade descriptors and other information concerning grading are contained in the Macquarie University Grading Policy which is available at:  

**GRADING APPEALS AND FINAL EXAMINATION SCRIPT VIEWING**

If, at the conclusion of the unit, you have performed below expectations, and are considering lodging an appeal of grade and/or viewing your final exam script please refer to the following website which provides information about these processes and the cut off dates in the first instance. Please read the instructions provided concerning what constitutes a valid grounds for appeal before appealing your grade.

http://www.businessandeconomics.mq.edu.au/new_and_current_students/undergraduate_current_students/how_do_i/grade_appeals

**SPECIAL CONSIDERATION**

The University is committed to equity and fairness in all aspects of its learning and teaching. In stating this commitment, the University recognises that there may be circumstances where a student is prevented by unavoidable disruption from performing in accordance with their ability. A special consideration policy exists to support students who experience serious and unavoidable disruption such that they do not reach their usual demonstrated performance level. The policy is available at:

http://www.mq.edu.au/policy/docs/special_consideration/policy.html

**STUDENT SUPPORT SERVICES**

Macquarie University provides a range of Academic Support Services. Details of these and other services for students can be accessed at http://www.student.mq.edu.au.

**IT CONDITIONS OF USE**

Access to all student computing facilities within the Faculty of Business and Economics is restricted to authorised coursework for approved units. Student ID cards must be displayed in the locations provided at all times.
Students are expected to act responsibly when using University IT facilities. The following regulations apply to the use of computing facilities and online services:

- Accessing inappropriate web sites or downloading inappropriate material is not permitted. Material that is not related to coursework for approved units is deemed inappropriate.
- Downloading copyright material without permission from the copyright owner is illegal, and strictly prohibited. Students detected undertaking such activities will face disciplinary action, which may result in criminal proceedings.

Non-compliance with these conditions may result in disciplinary action without further notice.

Students must use their Macquarie University email addresses to communicate with staff as it is University policy that the University issued email account is used for official

**QUESTIONS**

If you have any question at all about ACC 1, please ask! Don’t be afraid to ask questions - the only dumb question is the one that doesn’t get asked!

We hope that you enjoy the unit.
# Actuarial Control Cycle 1 2012 Timetable

<table>
<thead>
<tr>
<th>Week</th>
<th>Week Beginning</th>
<th>Topic/Activity</th>
<th>UAM Chapter</th>
<th>Teacher</th>
<th>Assessment Task Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>27 Feb</td>
<td>Overview: Control Cycle</td>
<td>1</td>
<td>LT</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>5 March</td>
<td>Context of Actuarial Work</td>
<td>5, part of 14</td>
<td>PC</td>
<td>TCT1&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>3</td>
<td>12 March</td>
<td>Enterprise Risk Management</td>
<td>2</td>
<td>BE</td>
<td>TCT2</td>
</tr>
<tr>
<td>4</td>
<td>19 March</td>
<td>Regulation</td>
<td>7</td>
<td>BE</td>
<td>TCT3</td>
</tr>
<tr>
<td>5</td>
<td>26 March</td>
<td>Meeting Consumers’ Needs</td>
<td>4</td>
<td>BE</td>
<td>TCT4</td>
</tr>
<tr>
<td>6</td>
<td>2 April</td>
<td>Product Design</td>
<td>8</td>
<td>PC</td>
<td>TCT5; Assignment 1</td>
</tr>
</tbody>
</table>

**STUDY** 9 April  NO CLASSES

**BREAK** 16 April  NO CLASSES

| 7    | 23 April       | Modelling and Data  | 9, 10     | BE      | TCT6; Assignment 2  |
| 8    | 30 April       | Class Presentations | BE/PC/BL  |         | Presentation<sup>2</sup> |
| 9    | 7 May          | Need for Capital    | 11        | BE      | TCT7                |
| 10   | 14 May         | Need for Capital (cont) | 11   | BE      |                     |
| 11   | 21 May         | Pricing             | 13        | BE      | TCT8                |
| 12   | 28 May         | Pricing (cont)      | 13        | BE      | Reflective Writing Task |
| 13   | 4 June         | Revision            |           | LT      |                     |

12-29 June  MID-YEAR FINAL EXAM PERIOD

Changes may occur, and will be advised in classes and on the ACC 1 web site.

Leonie Tickle  
ACST402/831/831X Unit Convenor  
22 February 2012

<sup>1</sup> TCT = Textbook Chapter Task. TCTs are due Monday 11.55 pm, and all other assessment tasks are due Sunday 11.50 pm.

<sup>2</sup> The Presentation is for Macquarie and city students only – there is a Discussion Contribution Task for distance students only.