### STAT6045

**Actuarial Techniques**

This course provides a simplified model for solving actuarial problems in practice. Sample actuarial problems are examined in detail, with solutions being developed using Excel and Visual Basic. These solutions are then reported to the stakeholders of the problem. The aim of this course is to develop actuarial capabilities beyond the technical foundations taught in other actuarial courses.

<table>
<thead>
<tr>
<th>Mode of Delivery</th>
<th>On campus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisites</td>
<td>Completion of or concurrent enrolment in STAT6043</td>
</tr>
<tr>
<td>Incompatible Courses</td>
<td>N/A</td>
</tr>
<tr>
<td>Co-taught Courses</td>
<td>STAT3038</td>
</tr>
<tr>
<td>Course Convener:</td>
<td>Adam Butt</td>
</tr>
<tr>
<td>Phone:</td>
<td>6125 3580 or x53580</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:adam.butt@anu.edu">adam.butt@anu.edu</a></td>
</tr>
<tr>
<td>Office hours for student consultation:</td>
<td>I have an open door policy and am happy to take questions whenever I am in my office. Alternatively you may wish to make an appointment by using the above contact details.</td>
</tr>
<tr>
<td>Research Interests:</td>
<td>My research interests include individual decisions in relation to retirement and actuarial education. See my staff profile webpage for more information.</td>
</tr>
<tr>
<td>Course administrator:</td>
<td>Colleen Lee</td>
</tr>
<tr>
<td>Phone:</td>
<td>6125 3580 or x56189</td>
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<td>Email:</td>
<td><a href="mailto:colleen.lee@anu.edu.au">colleen.lee@anu.edu.au</a></td>
</tr>
</tbody>
</table>

**SEMESTER 2**

**2017**
COURSE OVERVIEW

Learning Outcomes

Upon successful completion of the requirements for this course, students will be able to:

1. Identify actuarial problems in a variety of contexts.
2. Identify the key factors that need to be taken into account in solving actuarial problems.
3. Use computer-based tools to assist in solving actuarial problems.
4. Communicate in writing the results of the solution to actuarial problems to a variety of stakeholders.

Assessment Summary

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Value</th>
<th>Due Date</th>
<th>Date for Return of Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment 1</td>
<td>25%</td>
<td>Thursday 31 August at 12pm</td>
<td>Friday 15 September</td>
</tr>
<tr>
<td>Assignment 1 exam</td>
<td>25%</td>
<td>Week 7 of semester</td>
<td>N/A</td>
</tr>
<tr>
<td>Assignment 2</td>
<td>25%</td>
<td>Thursday 26 October at 12pm</td>
<td>Friday 10 November</td>
</tr>
<tr>
<td>Assignment 2 exam</td>
<td>25%</td>
<td>Final examination period</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Research-Led Teaching

The majority of the content in this course is taught using a “problem-based learning” (PBL) approach. Under a PBL approach, learning is experienced in the consideration of detailed problems that students are required to solve, with students being required to do their own research in solving the problems. Hence the structure of classes may be different from what you have experienced in other courses. The expected benefits to students of PBL are increased engagement and autonomy of learning experience. The course is deliberately structured in this way to prepare students for work and/or future study that will require problem solving skills not fully developed in other courses in the actuarial program.

Group Work and Group Allocation

Many of the problems considered in this course (including Assignment 1 and Assignment 2) will be done by groups. This is done for two reasons. One reason is to provide a simplified replica of a team environment in order to provide students with some preparation for a likely upcoming transition to work. For this reason groups will be allocated randomly before the first class. After the completion of Assignment 1, new groups will be allocated for the completion of Assignment 2.

The second reason for using group work is to enable the consideration of problems too large for individuals to have time for. The two assignments that are the centrepieces of this course are designed to be unstructured and realistic, although simple enough for groups to have the ability to attempt.

Groups will be provided with significant training on techniques for effective group work. An additional 90 minute workshop in Week 1 or Week 2 has been prepared to provide the majority of this training. A variety of times for this workshop are available; groups will be required to sign up to this workshop on Wattle. Further information will be provided in class and on Wattle.
A discussion forum marked “Group Forum” has been provided on Wattle specifically for group interactions and will only be available to group members, group consultants and the course convenor. Groups may choose to use other methods of sharing information as they see appropriate. Further discussion of group dynamics will occur in the first week of the course and in the Week 1 or Week 2 training session described above.

Consultation

Each group will be allocated a group consultant, whose role it is to provide guidance to groups during the course. Details on the group consultant allocated to each group will be placed on Wattle shortly after the groups have been allocated. Further details on the role of the group consultant have been placed on Wattle.

Feedback

Staff Feedback

Students will be given feedback in the following forms in this course:

- Whole of class feedback in-class and via discussion forums
- Individual and groups discussions in class
- Direct feedback by group consultants to groups
- Written comments on assignment submissions
- Individual meetings with the course convenor as organised by students

Student Feedback

ANU is committed to the demonstration of educational excellence and regularly seeks feedback from students. One of the key formal ways students have to provide feedback is through Student Experience of Learning Support (SELS) surveys. The feedback given in these surveys is anonymous and provides the Colleges, University Education Committee and Academic Board with opportunities to recognise excellent teaching, and opportunities for improvement.

For more information on student surveys at ANU and reports on the feedback provided on ANU courses, go to

http://unistats.anu.edu.au/surveys/selt/students/ and
http://unistats.anu.edu.au/surveys/selt/results/learning/

Required Resources

All basic course materials will be available on Wattle. Students will be required to print these out themselves if they want a hard copy of them.

The use of Excel and Word is required for the completion of all assessment in this course. You are not required to have any background in Excel or Word before taking this course. Excel and Word may be used on campus or on the students’ personal computers or laptops. Students are encouraged to bring a laptop to the workshops to allow Excel interaction.
**Communication**

**Announcements**

The primary method of communicating with students will be through Wattle ([https://wattle.anu.edu.au](https://wattle.anu.edu.au)), the University's online learning environment. Log on to Wattle using your student number and your ISIS password. Students are expected to check the Wattle site for announcements about this course, e.g. changes to timetables or notifications of cancellations. Notifications of emergency cancellations of lectures or tutorials will be posted on the door of the relevant room.

**Email**

If necessary, the course convenor and/or the group consultant for this course will contact students on their official ANU student email address. Information about your enrolment and fees from the Registrar and Student Services' office will also be sent to this email address.

**From students**

Any non-personal queries regarding the course should generally be made through the appropriate discussion forum in Wattle. Any personal queries regarding the course should generally be made by emailing the course convenor. Queries will typically be answered within 24 hours on weekdays.

**General information for actuarial students**

A generic Wattle site has been created for actuarial students called “Actuarial Students’ News and Information”. The purpose of this page is to provide actuarial students with up to date news on the actuarial profession, requirements for qualification, job opportunities and any other relevant information. To access it, login to Wattle and in the “Search Courses” box at the top of the page search for “Actuarial”. Then find the link to the “Actuarial Students’ News and Information” page and click on it, selecting “Yes” to enrol in the course. You will remain enrolled in the site for the remainder of your degree at ANU.
## COURSE SCHEDULE

<table>
<thead>
<tr>
<th>Week</th>
<th>Summary of Activities</th>
<th>Assessment</th>
</tr>
</thead>
</table>
| 1    | Introduction to group work  
Elements of actuarial problem solving  
Deterministic cash flow modelling in Excel |            |
| 2    | Scoping of Assignment 1 |            |
| 3    | Excel design for complicated cash flow models |            |
| 4    | Assumption setting (deterministic) |            |
| 5    | Communication of the results of deterministic cash flow models |            |
| 6    | Debrief of Assignment 1  
Exam Preparation | Assignment 1 due |
| 7    | Stochastic cash flow modelling in Excel | Assignment 1 exam |
| 8    | Scoping of Assignment 2 |            |
| 9    | Assumption setting (stochastic) - economic |            |
| 10   | Assumption setting (stochastic) - demographic |            |
| 11   | Communication of the results of stochastic cash flow models |            |
| 12   | Debrief of Assignment 2  
Exam Preparation | Assignment 2 due |

Examination period | Assignment 2 exam

Classes for the course will occur twice each week (see [http://timetable.anu.edu.au](http://timetable.anu.edu.au) for details of class times), each being of two hour duration. Further detail of the structure of classes will be provided in class and on Wattle.
ASSESSMENT TASKS

Assignments 1 & 2

These tasks will be completed in groups and will require groups to perform an actuarial function for a stakeholder and report the results to the stakeholder. Further information about the assignments will be provided in Wattle. Assignments are submitted using the course Wattle site. Further information about assignment submission will be provided in the assignment description on Wattle.

Members of a group will generally all receive the same mark, although the course convenor reserves the right to award individual students a lower mark than others in the group where meetings with the group consultant and a post-assignment survey reveal significant deficiencies in the effort put in by any members in a group. Further information on this process is found in the assignment descriptions on Wattle.

Examination(s)

The examinations are extensions of the two assignments, but will be completed on an individual basis. They will take place during the ANU examination periods (see http://timetable.anu.edu.au/exams/). They will both be 1.5 hours in length, plus 10 minutes of reading time. The exam(s) will be open-book and will be held in the computer laboratories on campus. Further information will be provided to students in class and on Wattle.

Extensions and penalties

Extensions and late submission of assessment pieces are covered by the Student Assessment (Coursework) Policy and Procedure.

The Course Convener may grant extensions for assignments. If your group needs an extension, you must request it by email to the course convener on or before the due date, although they may be discussed informally with the course convener before making a request by email. If you have documented and appropriate medical evidence that demonstrates your group was not able to request an extension on or before the due date, you may be able to request it after the due date.

No submission of assignments without an extension after the due date will be permitted. If an assessment task is not submitted by the due date, a mark of 0 will be awarded.

Returning assignments

Assignments will be returned by Wattle post to the group forum of each group.

Scaling

Your final mark for the course will be based on the raw marks allocated for each of your assessment items. However, your final mark may not be the same number as produced by that formula, as marks may be scaled. Any scaling applied will preserve the rank order of raw marks (i.e. if your raw mark exceeds that of another student, then your scaled mark will exceed the scaled mark of that student), and may be either up or down.
GENERAL MATTERS

Policies

ANU has educational policies, procedures and guidelines, which are designed to ensure that staff and students are aware of the University’s academic standards, and implement them. You can find the University’s education policies and an explanatory glossary at: http://policies.anu.edu.au/

Students are expected to have read the Academic Misconduct Rule before the commencement of their course.

Other key policies include:

- Student Assessment (Coursework)
- Student Surveys and Evaluations

Privacy Notice

The ANU has made a number of third party, online, databases available for students to use. Use of each online database is conditional on student end users first agreeing to the database licensor’s terms of service and/or privacy policy. Students should read these carefully.

In some cases student end users will be required to register an account with the database licensor and submit personal information, including their: first name; last name; ANU email address; and other information.

In cases where student end users are asked to submit ‘content’ to a database, such as an assignment or short answers, the database licensor may only use the student’s ‘content’ in accordance with the terms of service – including any (copyright) licence the student grants to the database licensor.

Any personal information or content a student submits may be stored by the licensor, potentially offshore, and will be used to process the database service in accordance with the licensors terms of service and/or privacy policy.

If any student chooses not to agree to the database licensor’s terms of service or privacy policy, the student will not be able to access and use the database. In these circumstances students should contact their lecturer to enquire about alternative arrangements that are available.

Support for Students

The University offers a number of support services for students. Information on these is available online from http://students.anu.edu.au/studentlife/