

# School of Risk and Actuarial Studies

## **ACTL3162 General Insurance Techniques**

### **Course Outline Semester 2, 2017**

### **Course-Specific Information**

The Business School expects that you are familiar with the contents of this course outline. You must also be familiar with the Course Outlines Policies webpage which contains key information on:

- Program Learning Goals and Outcomes
- Academic Integrity and Plagiarism
- Student Responsibilities and Conduct
- Special Consideration
- Student Support and Resources

This webpage can be found on the Business School website:

<https://www.business.unsw.edu.au/degrees-courses/course-outlines/policies>

# Table of Contents

<u>COURSE-SPECIFIC INFORMATION</u>	<u>1</u>
<u>1 STAFF CONTACT DETAILS</u>	<u>1</u>
<u>2 COURSE DETAILS</u>	<u>1</u>
2.1 Teaching Times and Locations	1
2.2 Units of Credit	2
2.3 Summary of Course	2
2.4 Course Aims and Relationship to Other Courses	2
2.5 Student Learning Outcomes	3
<u>3 LEARNING AND TEACHING ACTIVITIES</u>	<u>5</u>
3.1 Approach to Learning and Teaching in the Course	5
3.2 Learning Activities and Teaching Strategies	5
<u>4 ASSESSMENT</u>	<u>6</u>
4.1 Formal Requirements	6
4.2 Assessment Details	6
4.3 Assignment Submission Procedure	7
4.4 Special Consideration, Late Submission and Penalties	8
4.5 Protocol for viewing final exam scripts	9
<u>5 COURSE RESOURCES</u>	<u>10</u>
<u>6 COURSE EVALUATION AND DEVELOPMENT</u>	<u>12</u>
<u>7 COURSE SCHEDULE</u>	<u>13</u>



## COURSE-SPECIFIC INFORMATION

### 1 STAFF CONTACT DETAILS

Lecturer-in-charge: Eric Cheung  
Room: Business School Building 549  
Phone No: 9385 7560  
Email: [eric.cheung@unsw.edu.au](mailto:eric.cheung@unsw.edu.au)

Eric Cheung is responsible for course administration, the lectures and related teaching and learning, and final assessment of the course. His consultation times will be announced on the course website.

The Tutors for the course are:

Staff	E-mail	Consultation
Anh Phuong Vu	<a href="mailto:p.vu@unsw.edu.au">p.vu@unsw.edu.au</a>	***
Ming Xu	<a href="mailto:mingda.xu@unsw.edu.au">mingda.xu@unsw.edu.au</a>	***
Devin Zhao	<a href="mailto:devin.zhao.hk@gmail.com">devin.zhao.hk@gmail.com</a>	***
Ridhi Dave	<a href="mailto:r.dave@unsw.edu.au">r.dave@unsw.edu.au</a>	***

\*\*\*The tutors will hold consultation in the week before any in-session assessment. Their consultation times will also be posted on the course Moodle web site.

### 2 COURSE DETAILS

#### 2.1 Teaching Times and Locations

This Course consists of:

- Weekly 2+1 hour lectures (weeks 1 to 12) – see below;
- Weekly 1 hour tutorials (weeks 2 to 13) – see below;

##### Lectures

Lectures will be held on **Mondays from 12pm to 2pm in ChemicalSc M17** and on **Wednesdays from 11am to 12pm Ritchie Theatre**, from week 1 to week 12. Timetables and locations are correct at time of editing. A full timetable of lectures and topics is provided later in this Course outline. Any alterations to the lecture times or locations will be advised in lectures and via the Course website.

##### Tutorials

Tutorials will be held from week 2 to week 13. They will cover topics covered in the previous week's lecture. Scheduled Tutorial Session times and locations are as follows:

M14A	Monday	2pm-3pm	Quadrangle G026	Ming Xu
M15A	Monday	3pm-4pm	UNSW Business School 232	Eric Cheung

W12A	Wednesday	12pm-1pm	Quadrangle G034	Anh Phuong Vu
W13A	Wednesday	1pm-2pm	Webster 256	Ridhi Dave
W14A	Wednesday	2pm-3pm	Morven Brown LG30	Ridhi Dave
H11A	Thursday	11am-12pm	Mathews 307	Devin Zhao
H12A	Thursday	12pm-1pm	Mathews 307	Devin Zhao
H13A	Thursday	1pm-2pm	Quadrangle G035	Ming Xu

Students must attend the tutorial for which they are enrolled. Attendance will be recorded and counts towards meeting the requirements to pass the course. If you wish to change your tutorial then you must lodge an application to change your tutorial time with the Student Centre.

In tutorials, we will implement interactive learning where participation is highly encouraged. To get the most out of the tutorials, students should cover the lectures' contents and complete assigned homework problems in advance of the tutorial.

## 2.2 Units of Credit

The course is worth 6 units of credit.

## 2.3 Summary of Course

This course covers the actuarial mathematics, statistics and models used in non-life insurance actuarial practice. Topics covered include: basic concepts of decision theory and Bayesian statistics; loss distributions and reinsurance, risk models including compound Poisson; estimation of aggregate claims distribution; probability of ruin; premium rating and credibility; experience rating systems; claims reserving for loss run-off data and generalised linear models. Students will apply these techniques with respect to principles of effective general insurance management. This course will cover the requirements for the Actuaries Institute CT6 course and students gaining at least a credit assessment will be recommended for exemption from the CT6 course.

## 2.4 Course Aims and Relationship to Other Courses

At the end of the course students should be able to:

- Model the excess of aggregate premiums over aggregate losses at any point in the future and describe how the model can be used;
- Fit a distribution to data;
- Incorporate past experience (of a contract or insured) into pricing and reserving;
- Give an overview of basic decision and game theory.

This course covers the mathematical foundations of non-life insurance risk modelling. The assumed knowledge for this course is a solid foundation in ACTL2111, ACTL2131 and ACTL2102. Depending on their educational background, some students may be allowed to enrol in this course without having completed these courses. We advise you to consult the lecturer if you do not have the required background.

The assumed knowledge of the course is a good understanding of mathematics as covered in a full year undergraduate program in Calculus and Linear Algebra. The main mathematical topics are covered in a series of lectures by Randell Heyman that

are available on the ACTL students common website (section “Back to Basics: Basic Mathematical Tools for Actuarial Students”). Students should review these lectures as well as Chapter 1.2 of the main textbook of the course at the very latest by the end of the first week.

## 2.5 Student Learning Outcomes

The aims of Section 2.4 (A to D) have been broken down into the following learning outcomes. At the end of the course students should be able to:

- A1. Calculate or approximate the distribution of the sum of losses, when their number is either deterministic or random;
- A2. Calculate the value of a reinsurance contract;
- A3. Describe the classical model of risk theory for the excess of aggregate premiums over aggregate losses;
- A4. Determine, for simple cases, the probability that aggregate losses will exceed aggregate premiums at any point in the future;
- B1. Calculate descriptive statistics and identify candidate distributions for fitting a model to data;
- B2. Estimate parameters of a given distribution using complete or censored/truncated data;
- B3. Evaluate the goodness of fit of a model via a range of metrics;
- B4. Understand Generalised Linear Models (GLM) and apply them in simple situations;
- B5. Understand how to model dependence between random variables using copulas;
- C1. Determine the pure Bayesian premium of a loss, given its experience, using parametric or non-parametric models;
- C2. Determine the expected present value of future liabilities arising from claims already incurred;
- D1. Discuss and apply elements of both decision and game theory

The Course Learning Outcomes are what you should be able to DO by the end of this course if you participate fully in learning activities and successfully complete the assessment items.

This course corresponds largely with the actuarial professional subject CT6 Statistical Methods. ACTL2102 covers several topics from this subject as well. The course’s Learning Outcomes relate to the aims of Institute of Actuaries aims in the following way:

Course Learning Outcomes	Institute of Actuaries aims
A1	CT6: ii, iii
A2	CT6: ii, iii
A3	CT6: iv
A4	CT6: iv

B1	CT6: ii
B2	CT6: ii
B3	CT6: ii
B4	CT6: vii
B5	None
C1	CT6: v
C2	CT6: vi
D1	CT6: i

The Learning Outcomes in this course also help you to achieve some of the overall Program Learning Goals and Outcomes for all undergraduate students in the Business School. Program Learning Goals are what we want you to BE or HAVE by the time you successfully complete your degree (e.g. 'be an effective team player'). You demonstrate this by achieving specific Program Learning Outcomes - what you are able to DO by the end of your degree (e.g. 'participate collaboratively and responsibly in teams').

For more information on Program Learning Goals and Outcomes, see the School's Course Outlines Policies webpage available at <https://www.business.unsw.edu.au/degrees-courses/course-outlines/policies>

The following table shows how your Course Learning Outcomes relate to the overall Program Learning Goals and Outcomes, and indicates where these are assessed (they may also be developed in tutorials and other activities):

Program Learning Goals and Outcomes		Course Learning Outcomes	Course Assessment Item
<i>This course helps you to achieve the following learning goals for all Business undergraduate students:</i>		<i>On successful completion of the course, you should be able to:</i>	<i>This learning outcome will be assessed in the following items:</i>
1	Knowledge	All	<ul style="list-style-type: none"> <li>• Assignment</li> <li>• Mid-term Exam</li> <li>• Final Exam</li> </ul>
2	Critical thinking and problem solving	All	<ul style="list-style-type: none"> <li>• Assignment</li> <li>• Mid-term Exam</li> <li>• Final Exam</li> </ul>
3a	Written communication	All	<ul style="list-style-type: none"> <li>• Assignment</li> <li>• Mid-term Exam</li> <li>• Final Exam</li> </ul>
3b	Oral communication	Not specifically addressed in this course	
4	Teamwork	Not specifically addressed in this course	

5a.	Ethical, social and environmental responsibility	Not specifically addressed in this course	
5b.	Social and cultural awareness	Not specifically addressed in this course	

### 3 LEARNING AND TEACHING ACTIVITIES

#### 3.1 Approach to Learning and Teaching in the Course

Lectures will review the main topics and provide coverage of the course concepts. They are an opportunity for students to develop an understanding of the main topics covered in the course and the level of knowledge expected. They provide a guide to the course of study during the session and the material students need to read and review. Students should read the prescribed readings prior to the lecture.

Tutorials and in-class activities are for students to ask questions on aspects of the course that need further clarification, and to interact with other students in the course. Students need to attempt the homework problems alone first and identify problems that require closer review. Students are strongly encouraged to work in teams as it is an opportunity to learn from other students and to develop team skills.

#### 3.2 Learning Activities and Teaching Strategies

It is expected the students will take a pro-active approach to learning. The course is organised into learning activities given in the following table. The Course Aims and Program Learning Goals they should develop are also indicated.

Activity	A	B	C	D	1	2	3	4	5
Required readings	X	X	X	X	X	X			
Lectures and in-class activities	X	X	X	X	X	X	X	X	X
In-class discussion of homework problems	X	X	X	X	X	X	X		
Optional readings	X	X	X	X	X				X
Optional exercises	X	X	X	X	X	X			

The aims A to D are developed during all activities. By nature, the actuarial program develops problem-solving and professional skills (Program Goals 1 and 2), and all activities contribute to that development.

*Students are expected to perform these activities in the following time frame (for the outcomes of week k):*

Week k-1	Week k	Week k+1
Required readings Have a first look at the homework problems (if possible, in a team)	Attend lecture Attempt homework problems (if possible, in a team), and prepare questions Review lecture notes, and seek help if needed	Attend tutorials, ask questions and review solutions Review relevant past quizzes and final exam questions



		Optional readings and exercises
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Thus, you should, in a given week, work on these three different stages for their corresponding three different course weeks. Note that thanks to the 12-weeks-in-13 model, homework problems are discussed in Week  $k+1$ .

It is expected that you will spend **at least ten hours per week** studying this course. In periods where you need to complete assignments or prepare for examinations, the workload may be greater. Over-commitment (to extra-curricular activities) has been a cause of failure for many students. You should take the required workload into account when planning how to balance study with employment and other activities. In the past, students have found the amount of content particularly challenging. **Don't allow yourself to fall behind the schedule!**

## 4 ASSESSMENT

### 4.1 Formal Requirements

In order to pass the course students must obtain an overall composite mark of 50 at least. It is important that students be punctual and reliable when submitting assessment. This is an important workplace requirement and students need to ensure they meet deadlines.

Your regular and punctual attendance at lectures and tutorials is expected in this course; see Part B of the Course Outline for details.

Note that students achieving an average of 65% or higher according to the following formula may be recommended for exemption from the Actuaries Institute professional course CT6:

1/3 of ACTL2102 grade plus 2/3 of ACTL3162 grade.

### 4.2 Assessment Details

Assessment of your performance in the course will be done through a number of tasks, listed in the following table with relevant details.

Assessment Task	Weight	LO <sup>1</sup>	Materials	Length	Due Date
Mid-term exam	15%	A1, A2, A3, A4	Weeks 1-4 MW 1-4	60 mins	28/08/2017, 12.20pm
Assignment	25%	A1, A2, A3, A4, B5	Weeks 1-5 MW 1-4, 10	N/a	03/10/2017, 4pm sharp
Final examination	60%	all	Weeks 4-12	2 hours	TBA

<sup>1</sup> Course Learning Outcomes that are assessed

### Mid-term exam

There will be one written answer mid-term exam of 60 minutes duration plus 5 minutes of reading time. **The mid-term exam will take place on Monday 28 August 2017, from 12.20pm to 1.55pm.** Its venue will be advertised later. The mid-term exam will be closed book. Students will only be allowed to bring the text "Formulae and Tables for Actuarial Examinations".

**Normal examination rules apply** to the conduct of mid-term exams. Calculators will be allowed in the mid-term and final examination but a clear indication of all of the steps involved in your calculations must be shown. The University will not supply calculators to students for use in examinations where the provision of calculators has not been requested by the course examiner. It is the student's responsibility to be familiar with the rules governing the conduct of examinations.

The course exams require written responses, with students earning marks for correct mathematical working as well as part marks for incorrect responses with correct method and reasoning. They test not only their knowledge of the material, but also the depth of their understanding of it.

### Assignment

The practical application of the course concepts based on real life actuarial problems is an important graduate attribute that employers require and this course aims to provide at least some introductory exposure to this. Writing skills for technical material are also important.

There will be one major (individual) Assignment for this course involving the practical application and interpretation of course concepts. It is based on the application of the technical concepts introduced within the learning outcomes A1, A2, A4, and B5. The assignment offers students the opportunity to engage in critical analysis, self-reflection and problem solving, as well as to demonstrate their understanding of the concepts and perspectives that are central to actuarial studies. The assignment specifically assesses the program goals "Knowledge", "Problem solving and critical thinking", as well as "Communication". Full information about the major assignment will be released early in the session.

### Final Examination

The final examination will assess students understanding of the concepts covered in the course and readings and their ability to apply them to practical problems. A deeper grasp of materials is expected from students at the final exam level than at the tutorial level.

The final examination will be a two hour written paper. The final examination will be closed book. Students will only be allowed to bring the text "Formulae and Tables for Actuarial Examinations" into the exam. This must not be annotated.

## 4.3 Assignment Submission Procedure

Assignment reports must be submitted via the Turnitin submission box that is available on the course website. Turnitin reports on any similarities between their own cohort's assignments, and also with regard to other sources (such as the internet or all assignments submitted all around the world via Turnitin). More information is available at:

[http://elearning.unsw.edu.au/turnitin/content/TurnItIn\\_Student\\_Support.cfm?ss=0](http://elearning.unsw.edu.au/turnitin/content/TurnItIn_Student_Support.cfm?ss=0)

Please read this page, as we will assume that its content is familiar to you. You will be able to make multiple submissions and have access to the originality reports.

You need to check your document once it is submitted (check it on-screen). **We will not mark assignments that cannot be read on screen.**

Students are reminded of the risk that technical issues may delay or even prevent their submission (such as internet connection and/or computer breakdowns). Students should then consider either submitting their assignment from the university computer rooms or **allow enough time (at least 24 hours is recommended) between their submission and the due time.** The Turnitin module will not let you submit a late report. **No paper copy will be either accepted or graded.**

In case of a technical problem, the full document must be submitted to the course coordinator before the due time by e-mail, with explanations about why the student was not able to submit on time. In principle, this assignment will not be marked. It is only in exceptional circumstances where the assignment was submitted before the due time by e-mail that it may be marked—and this only if a valid reason is established.

Students should keep a copy of all work submitted for assessment and keep their returned marked assignments.

<https://www.business.unsw.edu.au/degrees-courses/course-outlines/policies>

This course is using the Review software for marking and feedback for part of the assignment. The Review login is <https://unsw.review-edu.com/unsw>

Information on accessing Review will be provided to students with further details of the assignment. You won't have access to Review until you are advised.

### **Avoid a 0 for your assignment because of plagiarism**

Students are reminded that the work they submit must be their own. While we have no problem with students working together on the assignment problems, the material students submit for assessment must be their own. This means that:

- The mathematical solutions you present are written up by you and your group members, without reference to any other group's work.
- Any programming code you present are from your own computers, which you yourself and your group members developed, without any reference to any other group's work.

Students should make sure they understand what plagiarism is and to note that cases of plagiarism have a *very high* probability of being discovered. For issues of collective work, having different persons marking the assignment does *not* decrease this probability. For more information on plagiarism, see the School's Course Outlines Policies webpage available at <https://www.business.unsw.edu.au/degrees-courses/course-outlines/policies>

## **4.4 Special Consideration, Late Submission and Penalties**

For information on Special Consideration please refer to the Business School's Course Outlines Policies [webpage](#).

## **Special consideration and assessments other than the Final Exam in undergraduate and postgraduate courses:**

For courses offered by the School of Risk and Actuarial Studies, the weight of the assessment items for which special consideration is granted is re-allocated to the Final Exam. Alternatively, in exceptional cases and only for assessment items with a submission deadline, a delayed deadline may be granted. This may be no more than 5 business days after the initial deadline, and must be before feedback is provided to students.

Special consideration **does not** entitle students to a supplementary opportunity to complete the assessment item.

### **Late submission of assessment items**

When an assessment item had to be submitted by a pre-specified submission date and time and was submitted late, the School of Risk and Actuarial Studies will apply the following policy.

A penalty of 25% of the mark the student would otherwise have obtained, for each full (or part) day of lateness (e.g., 0 day 1 minute = 25% penalty, 2 days 21 hours = 75% penalty). Students who are late must submit their assessment item to the LIC via e-mail. The LIC will then upload documents to the relevant submission boxes. The date and time of reception of the e-mail determines the submission time for the purposes of calculating the penalty.

## **4.5 Protocol for viewing final exam scripts**

The UNSW Business School has set a protocol under which students may view their final exam script. Please check the protocol [here](#).

Individual Schools within the Faculty may set up a local process providing it is in keeping with the Faculty protocol. The School of Risk and Actuarial Studies implements the

abovementioned faculty guidelines in the following way:

1. There will be only one viewing.
2. Students must register (that is, lodge a request to view their final exam script) to [rasadmin@unsw.edu.au](mailto:rasadmin@unsw.edu.au) after results are released, but no later than COB on Wednesday 6 December 2017.
3. The viewing will take place on Monday 11 December 2017, at a time and location to be announced to registered students by COB on Friday 8 December 2017. Student **MUST** remain available for the **WHOLE** of 11 December 2017 until the time of their viewing is communicated.

**Note that students must make a separate, subsequent appointment with the LIC, should they wish to lodge a formal application for re-assessment**

### **Quality Assurance**

The Business School is actively monitoring student learning and quality of the student experience in all its programs. A random selection of completed assessment tasks may be used for quality assurance, such as to determine the extent to which program

learning goals are being achieved. The information is required for accreditation purposes, and aggregated findings will be used to inform changes aimed at improving the quality of Business School programs. All material used for such processes will be treated as confidential.

## 5 COURSE RESOURCES

### Course references

Note that ALL those references are freely downloadable and/or available from the library (with the only exception of the CT6 notes).

The **main prescribed textbook** for the course is:

- [MW] Wüthrich, Mario (2014), *Non-Life Insurance: Mathematics and Statistics*. This book can be downloaded for FREE from SSRN: <http://ssrn.com/abstract=2319328>  
Prof. Wüthrich is a professor at ETHZ and makes his book freely available worldwide. He updates his book regularly, so I recommend you check regularly for newer versions, and if you print, that you do so chapter per chapter at the last moment. [All outcomes but D1]

**Required** additional readings are:

- [FV] Frees, E.W. and Valdez, E.A. (1998), Understanding Relationships Using Copulas, *North American Actuarial Journal* 2:1, pp. 1-25 [Outcome B5. This can be downloaded from <http://dx.doi.org/10.1080/10920277.1998.10595667> ]
- [BG] Bühlmann, H. and Gisler, A. (2005), *A Course in Credibility Theory and its Applications*, Springer [Outcome C1. Chapter 1. This can be downloaded from <http://www.unsw.eblib.com.wwwproxy0.library.unsw.edu.au/patron/FullRecord.aspx?p=304314> ]
- [TM] Taylor, G., McGuire, G. (2016) Stochastic Loss Reserving Using Generalized Linear Models, CAS Monograph series, No. 3, Casualty Actuarial Society. [Outcomes B4 and C2. Chapter 3. This can be downloaded from <http://www.casact.org/pubs/monographs/index.cfm?fa=taylor-monograph03> ]
- [EV] Valdez, E. (2004), 'Decisions and Games', Notes prepared for UNSW students [Outcome D1. This document will be made available on the course website.]

**Suggested** (optional) readings are:

- [A] Bowers, N.L. Gerber, H.U., Hickman, J.C., Jones, D.A. and Nesbitt, C.J. (1997), *Actuarial Mathematics*, Society of Actuaries, 2nd Edition [A great classic for course aim A. Most students having completed the life insurance course should already have a copy.]
- [C] The Faculty of Actuaries and The Institute of Actuaries (2002), *Formulae and tables for examinations of the Faculty of Actuaries and The Institute of Actuaries*, ActEd [The formulae book that you are allowed to use, if unannotated, during the quizzes and the final exam. Most students should already have a copy.]
- [D] Dickson, D.C.M (1995), A review of Panjer's recursion formula and its applications, *British Actuarial Journal* 1:1, pp. 107-124 [Outcome A1. This can be downloaded from <http://dx.doi.org/10.1017/S1357321700000969> ]

- [E] Klugman, S. and Rioux, J. (2006), Toward a Unified Approach to Fitting Loss Models, *North American Actuarial Journal* 10:1, pp. 63-83 [Outcomes B1-B3. This can be downloaded from <http://www.tandfonline.com/doi/pdf/10.1080/10920277.2006.10596240> ]
- [F] Klugman, S.A., Panjer, H.H. and Willmot, G.E. (2008), *Loss Models: From Data to Decisions*, John Wiley & Sons, 3rd Edition. [Outcome B5. Chapter 7.]
- [H] Haberman, S. and Renshaw, A.E. (1996), Generalized linear models and actuarial science, *The Statistician* 45:4 pp. 407-436 [Outcome B4. This can be downloaded from <http://www.jstor.org/stable/2988543> ]
- [I] Boland, P.J. (2007), *Statistical and Probabilistic Methods in Actuarial Science*, Chapman & Hall/CRC [Outcome C2. Chapter 1.]
- [K] Nelsen, R.B. (2006), *An Introduction to Copulas*, Springer, 2nd Edition [Outcome B5. Chapter 2. This can be read from <http://er.library.unsw.edu.au/er/cgi-bin/eraccess.cgi?url=http://site.ebrary.com/lib/unsw/docDetail.action?docID=10187506> ]
- [L] De Jong, P. and Heller, G.Z. (2008), *Generalized Linear Models for Insurance Data*, Cambridge University Press [Outcome B4. Chapter 5. This can be downloaded from <http://er.library.unsw.edu.au/er/cgi-bin/eraccess.cgi?url=http://www.unsw.eblib.com.wwwproxy0.library.unsw.edu.au/patron/FullRecord.aspx?p=335049> ]
- [N] The Actuarial Education Company, *CT6 Combined Materials Pack*. [The official CT6 materials pack]
- [O] Lafaye de Micheaux Pierre, Drouilhet Rémy and Liquet Benoit (2013), *The R software: Fundamentals of Programming and Statistical Analysis*, Springer - Collection: Statistics and Computing, vol. 40.

All these references (except for the CT6 Combined Materials Pack) are available from the library. NOTE THAT THE LINKS REQUIRE YOU TO LOG IN AND/OR TO BE ON CAMPUS.

### Formulae & Tables

The only text students are allowed to bring into the examinations for the actuarial courses is the text "Formulae and Tables for Actuarial Examinations". It must not be annotated. All students in the actuarial courses should purchase a copy of this text if they wish to use it in quizzes and the final examinations. The text is available from the UNSW Bookstore, the UK Institute of Actuaries or from ActEd Australia. Visit the ActEd website at <http://www.acted.com.au>.

### Course website

The course website is available on Moodle: <https://moodle.telt.unsw.edu.au/login/index.php> or via my.unsw.edu.au.

All course contents will be available from the course website (except for the module "Back to Basics" which is available on the ACTL students common website). **It is essential that you visit the site regularly to see any notices posted there by the course coordinator, as it will be assumed that they are known to you within a reasonable time.**

### Actuaries Institute

The Actuaries Institute allows students to become University Subscribers free of charge. Full time university students who are members of a university student actuarial society are eligible.

To sign up, go to

<http://www.actuaries.asn.au/Membership/MembershipoftheInstitute/Subscriber.aspx>

## **6 COURSE EVALUATION AND DEVELOPMENT**

Each year feedback is sought from students and other stakeholders about the courses offered in the School and continual improvements are made based on this feedback. UNSW's myExperience survey is one of the ways in which student evaluative feedback is gathered. In this course, we will seek your feedback through end of semester myExperience responses. As a result of feedback from the past offerings of the course, a unified and unique textbook was found to replace the long list of prescribed references (almost 1 for each module). Moreover, more examples and exam style questions will be included in lectures as requested by many students in the last year.



## 7 COURSE SCHEDULE

Wk	Date	Topic	Prescribed Readings	CT6	Past Module
1	24 July 2017 26 July 2017	Introduction Collective Risk Modelling	MW 1 MW 2	n/a iii	0 1
2	31 July 2017 2 August 2017	Collective Risk Modelling Individual Claim Size Modelling	MW 2 MW 2	iii ii	1 3
3	7 August 2017 9 August 2017	Individual Claim Size Modelling Approximations for Compound Distributions	MW 3 MW 4	ii iii	3 1
4	14 August 2017 16 August 2017	Approximations for Compound Distributions Solvency Considerations	MW 4  MW 10	iii  n/a	1  n/a
5	21 August 2017 23 August 2017	Solvency Considerations Ruin Theory	MW 10 MW 5.0, 5.1, 5.2	n/a iv	n/a 2
6	28 August 2017, lecture time: Mid-term Exam				
	30-Aug-17	Ruin Theory	MW 5.0, 5.1, 5.2	iv	2
7	4 September 2017 6 September 2017	Ruin Theory Copulas	MW 5.0, 5.1, 5.2 FV	iv n/a	2 5
8	11 September 2017 13 September 2017	Premium Calculation Principles Tariffication Generalised Linear Models (GLMs)	MW 6.0, 6.1 MW 7.0 MW 7.3	n/a n/a vii	n/a n/a 4
9	18 September 2017 20 September 2017	Bayesian Models and Credibility Theory	BG 1, MW 8	v	6
Mid-semester break: 23 September – 1 October inclusive					
10	2 October 2017	Labour Day Public Holiday. No lecture.			
	3 October 2017, 4pm: Due date for the assignment				
	4 October 2017	Claims Reserving	MW 9	vi	7
11	9 October 2017 11 October 2017	Claims Reserving	MW 9 TM	vi vi	7 n/a
12	16 October 2017 18 October 2017	Game and Decision Theory	EV	i	8

This timetable may be altered. Students will be advised of any changes in lectures and via the course web site.