

# ACTL40002 Risk Theory I

<b>Credit Points:</b>	12.5						
<b>Level:</b>	4 (Undergraduate)						
<b>Dates &amp; Locations:</b>	2015, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.						
<b>Time Commitment:</b>	Contact Hours: Three hours of lectures and/or tutorials per week Total Time Commitment: Not available						
<b>Prerequisites:</b>	The following: <table border="1" data-bbox="389 573 1485 719"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>ACTL30004 Actuarial Statistics</td> <td>Semester 2</td> <td>12.50</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	ACTL30004 Actuarial Statistics	Semester 2	12.50
Subject	Study Period Commencement:	Credit Points:					
ACTL30004 Actuarial Statistics	Semester 2	12.50					
<b>Corequisites:</b>	None						
<b>Recommended Background Knowledge:</b>	Please refer to Prerequisites and Corequisites.						
<b>Non Allowed Subjects:</b>	None						
<b>Core Participation Requirements:</b>	For the purposes of considering requests for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements for this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website: <a href="http://www.services.unimelb.edu.au/disability/">http://www.services.unimelb.edu.au/disability/</a>						
<b>Coordinator:</b>	Assoc Prof Shuanming Li						
<b>Contact:</b>	<a href="mailto:shli@unimelb.edu.au">shli@unimelb.edu.au</a> ( <a href="mailto:shli@unimelb.edu.au">mailto:shli@unimelb.edu.au</a> )						
<b>Subject Overview:</b>	Topics include collective risk model, calculation of moments and mgf of aggregate claims, recursion formulae, effect of reinsurance; individual risk model, recursion formulae and approximations; credibility theory, exact credibility and the Buhlmann-Straub model; an introduction to ruin theory.						
<b>Learning Outcomes:</b>	<ul style="list-style-type: none"> <li># Apply relevant pre-requisite knowledge of mathematics, probability theory and statistics in the solution of a range of practical problems;</li> <li># Derive and calculate probabilities for, and moments of, loss distributions both with and without simple reinsurance arrangements;</li> <li># Construct risk models appropriate for short term insurance contracts and derive both moments and moment generating functions for aggregate claim amounts under these models;</li> <li># Derive recursion formulae to calculate aggregate claims distributions for short term insurance contracts;</li> <li># Describe and apply approximate methods of calculating an aggregate claims distribution;</li> <li># Explain the fundamental concepts of Bayesian statistics and apply these concepts to derive Bayesian estimators;</li> <li># Describe and apply the fundamental concepts of credibility theory;</li> <li># Explain the concept of ruin for a risk model;</li> <li># Explain the significance of the adjustment coefficient in ruin theory.</li> </ul>						

<b>Assessment:</b>	A 50-minute mid-semester test (20%) and a 2-hour end-of-semester examination (80%).
<b>Prescribed Texts:</b>	You will be advised of prescribed texts by your lecturer.
<b>Recommended Texts:</b>	Information Not Available
<b>Breadth Options:</b>	This subject is not available as a breadth subject.
<b>Fees Information:</b>	Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>
<b>Generic Skills:</b>	# High level of development: written communication; problem solving; statistical reasoning; application of theory to practice; interpretation and analysis.