

# ACTL30001 Actuarial Modelling I

<b>Credit Points:</b>	12.5
<b>Level:</b>	3 (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: Two x 1-hour lecture during semester; An additional one hour lecture every 3rd week during semester; 1x1 hour tutorial per week commencing in second week of semester. Total Time Commitment: Estimated total time commitment of 170 hours.
<b>Prerequisites:</b>	For students who started their degree in 2007 or earlier: <b>300-204 Financial Mathematics II</b> ( <a href="#">../view/2010/300-204</a> ) , <b>620-202 Statistics</b> ( <a href="#">../view/2010/620-202</a> ) and one of 620-113 Applied Mathematics (Advanced Plus) and 620-123 Applied Mathematics (Advanced). For students who started their degree in 2008 or later: <b>ACTL20002 Financial Mathematics II</b> ( <a href="#">../view/current/ACTL20002</a> ) and <b>MAST20005 Statistics</b> ( <a href="#">../view/current/MAST20005</a> ) .
<b>Corequisites:</b>	None
<b>Recommended Background Knowledge:</b>	Please refer to Prerequisites and Corequisites.
<b>Non Allowed Subjects:</b>	Students may not gain credit for both <b>ACTL30001 Actuarial Modelling I</b> ( <a href="#">../view/2010/300-312</a> ) and 300-330 Survival Models: Theory and Applications.
<b>Core Participation Requirements:</b>	<p>For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry.</p> <p>It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: <a href="http://services.unimelb.edu.au/disability">http://services.unimelb.edu.au/disability</a></p>
<b>Coordinator:</b>	Prof David Dickson
<b>Contact:</b>	<a href="mailto:dcmd@unimelb.edu.au">dcmd@unimelb.edu.au</a> ( <a href="mailto:dcmd@unimelb.edu.au">mailto:dcmd@unimelb.edu.au</a> )
<b>Subject Overview:</b>	Topics include survival models concepts; estimation procedures for lifetime distributions; multiple state models; binomial model of mortality; actuarial applications of Markov processes.
<b>Learning Outcomes:</b>	<ul style="list-style-type: none"> <li># Explain the concept of survival model;</li> <li># Describe estimation procedures for lifetime distributions;</li> <li># Define a Markov process, and apply Markov models in actuarial problems;</li> <li># Describe models of transfer between multiple states, including processes with single or multiple decrements, and derive relationships between probabilities of transfer and transition intensities;</li> <li># Derive maximum likelihood estimators for the transition intensities in models of transfers between states with piecewise constant transition intensities;</li> <li># Describe the binomial model of mortality, a maximum likelihood estimator for the probability of death and compare the binomial model with the multiple state models;</li> <li># Apply pre-requisite mathematical and statistical concepts to the solution of problems on the above topics.</li> </ul>
<b>Assessment:</b>	A 2-hour end of semester examination (80%) and up to three assignments totalling not more than 20 pages (20%).

<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>	<p>This subject potentially can be taken as a breadth subject component for the following courses:</p> <ul style="list-style-type: none"> <li># <b>Bachelor of Arts</b> (<a href="https://handbook.unimelb.edu.au/view/2015/B-ARTS">https://handbook.unimelb.edu.au/view/2015/B-ARTS</a>)</li> <li># <b>Bachelor of Environments</b> (<a href="https://handbook.unimelb.edu.au/view/2015/B-ENVS">https://handbook.unimelb.edu.au/view/2015/B-ENVS</a>)</li> <li># <b>Bachelor of Music</b> (<a href="https://handbook.unimelb.edu.au/view/2015/B-MUS">https://handbook.unimelb.edu.au/view/2015/B-MUS</a>)</li> </ul> <p>You should visit <b>learn more about breadth subjects</b> (<a href="http://breadth.unimelb.edu.au/breadth/info/index.html">http://breadth.unimelb.edu.au/breadth/info/index.html</a>) and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.</p>
<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; synthesis of data and other information.
<b>Related Course(s):</b>	Master of Accounting