

# MAST30027 Modern Applied Statistics

<b>Credit Points:</b>	12.50						
<b>Level:</b>	3 (Undergraduate)						
<b>Dates &amp; Locations:</b>	This subject is not offered in 2013. Lectures and computer laboratory classes.						
<b>Time Commitment:</b>	Contact Hours: 3 x one hour lectures per week, 1 x one hour computer laboratory class per week Total Time Commitment: Estimated total time commitment of 120 hours						
<b>Prerequisites:</b>	<p>One of</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MAST30025 Linear Statistical Models</td> <td>Not offered 2013</td> <td>12.50</td> </tr> </tbody> </table> <p>620-371 Linear Models (prior to 2010)</p>	Subject	Study Period Commencement:	Credit Points:	MAST30025 Linear Statistical Models	Not offered 2013	12.50
Subject	Study Period Commencement:	Credit Points:					
MAST30025 Linear Statistical Models	Not offered 2013	12.50					
<b>Corequisites:</b>	None						
<b>Recommended Background Knowledge:</b>	None						
<b>Non Allowed Subjects:</b>	<p>Students may only gain credit for one of</p> <ul style="list-style-type: none"> <li># MAST30027 Modern Applied Statistics</li> <li># 620-372 Applied Statistical Inference (prior to 2010)</li> </ul> <p>Students who gain credit for both ACTL30001 Actuarial Modelling 1 and ACTL30004 Actuarial Statistics cannot also gain credit for MAST30027 Modern Applied Statistics.</p>						
<b>Core Participation Requirements:</b>	For the purposes of considering request 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 of 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>Contact:</b>	<p>Third Year Coordinator</p> <p><b>Email:</b> <a href="mailto:tycoord@ms.unimelb.edu.au">tycoord@ms.unimelb.edu.au</a> (<a href="mailto:tycoord@ms.unimelb.edu.au">mailto:tycoord@ms.unimelb.edu.au</a>)</p>						
<b>Subject Overview:</b>	Modern applied statistics combines the power of modern computing and theoretical statistics. This subject reviews the principles of statistical inference and considers the computational techniques, including the EM algorithm, required for their practical implementation. Bayes methods and Monte-Carlo methods are considered along with a rigorous approach to hypothesis testing. The subject concludes with the application of these methods to generalised linear models, which are commonly used in the analysis of categorical data.						
<b>Objectives:</b>	<p>At the completion of the subject, students should:</p> <ul style="list-style-type: none"> <li># Understand the theory and applications of various mainstream applied statistical methods;</li> <li># Be able to use appropriate statistical methods to develop effective models or inferential procedures and provide sound interpretations for real-world data analysis;</li> <li># Be able to use a computer package to perform statistical computing and data analysis.</li> </ul>						
<b>Assessment:</b>	Six written assignments due at regular intervals during semester amounting to a total of up to 50 pages (20%), and a 3-hour written examination in the examination period (80%).						
<b>Prescribed Texts:</b>	None						

<b>Recommended Texts:</b>	<ul style="list-style-type: none"> <li># A. Agresti, An Introduction to Categorical Data Analysis, 2nd Ed. Wiley-Interscience, 2007.</li> <li># J. Higgins, Introduction to Modern Nonparametric Statistics, 1st Ed. Thomson Brooks/Cole, 2004.</li> <li># Hogg, McKean and Craig, Introduction to Mathematical Statistics, 6th Ed. Pearson Inc., 2005.</li> <li># Venables and Ripley, Modern Applied Statistics with S, 4th Ed. Springer, 2002.</li> </ul>
<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 Commerce</b> (<a href="https://handbook.unimelb.edu.au/view/2013/B-COM">https://handbook.unimelb.edu.au/view/2013/B-COM</a>)</li> <li># <b>Bachelor of Environments</b> (<a href="https://handbook.unimelb.edu.au/view/2013/B-ENVS">https://handbook.unimelb.edu.au/view/2013/B-ENVS</a>)</li> <li># <b>Bachelor of Music</b> (<a href="https://handbook.unimelb.edu.au/view/2013/B-MUS">https://handbook.unimelb.edu.au/view/2013/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>	<p>In addition to learning specific skills that will assist students in their future careers in science, they will have the opportunity to develop generic skills that will assist them in any future career path. These include</p> <ul style="list-style-type: none"> <li># problem-solving skills: the ability to engage with unfamiliar problems and identify relevant solution strategies;</li> <li># analytical skills: the ability to construct and express logical arguments and to work in abstract or general terms to increase the clarity and efficiency of analysis;</li> <li># collaborative skills: the ability to work in a team;</li> <li># time management skills: the ability to meet regular deadlines while balancing competing commitments;</li> <li># computer skills: the ability to use statistical computing packages.</li> </ul>
<b>Notes:</b>	This subject is available for science credit to students enrolled in the BSc (both pre-2008 and new degrees), BAsC or a combined BSc course.
<b>Related Majors/Minors/Specialisations:</b>	<p>Science credit subjects* for pre-2008 BSc, BAsC and combined degree science courses  Science-credited subjects - new generation B-SCI and B-ENG. Core selective subjects for B-BMED.  Statistics / Stochastic Processes  Statistics / Stochastic Processes  Statistics / Stochastic Processes (specialisation of Mathematics and Statistics major)</p>