MAST30027 Modern Applied Statistics

Credit Points:	12.50
Level:	3 (Undergraduate)
Dates & Locations:	2010, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus. Lectures and computer laboratory classes.
Time Commitment:	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

Prerequisites:	One of
	  # **620-328 Linear Statistical Models (../../view/2010/620-328)**
	  # 620-371 Linear Models (prior to 2010)

Corequisites:	None
Recommended Background Knowledge:	None

Non Allowed Subjects:	Students may only gain credit for one of
	  # 620-330 Modern Applied Statistics
	  # 620-372 Applied Statistical Inference (prior to 2010)

Core Participation Requirements:	It is University policy to take all reasonable steps to minimise the impact of disability upon academic study and reasonable steps will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact upon their active and safe participation in a subject are encouraged to discuss this with the relevant subject coordinator and the Disability Liaison Unit.
Coordinator:	Dr Guoqi Qian
Contact:	Third Year Coordinator **Email: tycoord@ms.unimelb.edu.au (mailto:tycoord@ms.unimelb.edu.au)**
Subject Overview:	Modern applied statistics combines the power of modern computing and theoretical statistics. Starting with a review of maximum likelihood theory this subject then introduces Bayesian and nonparametric statistics and Monte Carlo computational techniques. Specific applications include the generalised linear models that are commonly used in the analysis of categorical data and the analysis of the censored data that arises in survival analysis.

Objectives:	At the completion of the subject, students should:
	  # Understand the theory and applications of various mainstream applied statistical methods;
	  # Be able to use appropriate statistical methods to develop effective models or inferential procedures and provide sound interpretations for real-world data analysis;
	  # Be able to use a computer package to perform statistical computing and data analysis.

Assessment:	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%).
Prescribed Texts:	None

Recommended Texts:	# A. Agresti, An Introduction to Categorical Data Analysis, 2nd Ed. Wiley-Interscience, 2007.
	  # J. Higgins, Introduction to Modern Nonparametric Statistics, 1st Ed. Thomson Brooks/Cole, 2004.
	  # Hogg, McKean and Craig, Introduction to Mathematical Statistics, 6th Ed. Pearson Inc., 2005.

	# Venables and Ripley, Modern Applied Statistics with S, 4th Ed. Springer, 2002.
Breadth Options:	This subject potentially can be taken as a breadth subject component for the following courses: # **Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2010/B-COM)** # **Bachelor of Environments (https://handbook.unimelb.edu.au/view/2010/B-ENVS)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2010/B-MUS)** You should visit **learn more about breadth subjects (http://breadth.unimelb.edu.au/breadth/info/index.html)** and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	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 # problem-solving skills: the ability to engage with unfamiliar problems and identify relevant solution strategies; # 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; # collaborative skills: the ability to work in a team; # time management skills: the ability to meet regular deadlines while balancing competing commitments; # computer skills: the ability to use statistical computing packages.
Notes:	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.
Related Course(s):	Bachelor of Science
Related Majors/Minors/ Specialisations:	Mathematics and Statistics (Statistics specialisation) Statistics / Stochastic Processes