

MAST30025 Linear Statistical Models

Credit Points:	12.50
Level:	3 (Undergraduate)
Dates & Locations:	2010, Parkville This subject commences in the following study period/s: Semester 1, 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:	620-202 Statistics (/view/2010/620-202) Plus one of # 620-156 Linear Algebra (/view/2010/620-156) # 620-157 Accelerated Mathematics 1 (/view/2010/620-157) # 620-122 Mathematics B Advanced (prior to 2008) # 620-142 Mathematics B (prior to 2009) # 620-190 UMEP Maths for High Achieving Students # 620-192 Mathematics B (prior to 2006) # 620-194 Mathematics B Advanced (prior to 2006) # 620-211 Mathematics 2 Advanced (prior to 2008)
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	Students may only gain credit for one of # 620-328 Linear Statistical Models # 620-371 Linear Models (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 Yao-Ban Chan
Contact:	Third Year Coordinator Email: tycoord@ms.unimelb.edu.au (mailto:tycoord@ms.unimelb.edu.au)
Subject Overview:	Linear models are central to the theory and practice of modern statistics. They are used to model a response as a linear combination of explanatory variables and are the most widely used statistical models in practice. Starting with examples from a range of application areas this subject develops an elegant unified theory that includes the estimation of model parameters, quadratic forms, hypothesis testing using analysis of variance, model selection, diagnostics on model assumptions, and prediction. Both full rank models and models that are not of full rank are considered. The theory is illustrated using common models and experimental designs.
Objectives:	On completion of this subject students should be able to # Understand the underlying statistical theory of linear models and the limitations of such models;

	# Fit linear models to data using a standard statistical computing package and interpret the results.
Assessment:	Two or three 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
Breadth Options:	<p>This subject potentially can be taken as a breadth subject component for the following courses:</p> <ul style="list-style-type: none"> # 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) <p>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.</p>
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	<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"> # 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; # 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:	<p>Environmental Science Environmental Science Environmental Science Mathematics and Statistics (Financial Mathematics specialisation) Mathematics and Statistics (Statistics specialisation) Statistics / Stochastic Processes</p>