620-298 Data Analysis 2

Credit Points:	12.50
Level:	2 (Undergraduate)
Dates & Locations:	2009, This subject commences in the following study period/s: Semester 1, - Taught on campus. Lectures, practice classes and computer laboratory classes
Time Commitment:	Contact Hours: 36 one-hour lectures (three per week), 11 one-hour practice classes (one per week), 11 one-hour computer laboratory classes (one per week) Total Time Commitment: 120 hours total time commitment.
Prerequisites:	One of # 620-152 (prior to 2008) # *Data Analysis 1* # 620-160 (prior to 2008) # *Experimental Design and Data Analysis* # 316-130 Quantitative Methods 1.
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	Students may only gain credit for one of *Data Analysis 2,* 620-270 (prior to 2009), A*pplied Statistics for Optometrists, Statistics for Mechanical Engineers*. Passing *Data Analysis 2* precludes subsequent credit for *Data Analysis 1* or *Experimental Design and Data Analysis*. Students who have completed *Linear Models* may not enrol in this subject for credit.
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 participation are encouraged to discuss this with the subject coordinator and the Disability Liaison Unit.
Coordinator:	Dr Andrew Peter Robinson
Subject Overview:	This subject demonstrates the importance of statistical methods for interpreting data, the role of exploratory and formal data analysis and the importance of experimental design. Students should learn to examine data to determine underlying structures, formulate statistical models for a range of practical situations and check the assumptions of the model in specific situations. They should also learn to use the computer to carry out standard statistical analyses and to express conclusions in scientifically useful terms. Statistical inference topics include: estimation; confidence intervals; hypothesis testing. Correlation and regression, including residuals, diagnostics, transformations. Multiple linear regression, including collinearity; model selection; and polynomial regression. Analysis of variance topics include: one-way and two-way models, including interaction and its interpretation. Design of experiments topics include: randomisation; replication; blocking; standard designs including completely randomised, randomised block and Latin square designs; factorial experiments: analysis; blocking and confounding. Analysis of covariance. Logistic regression for categorical data.
Objectives:	Students completing this subject should: *Comprehend:* # how statistical models are used to analyse data; # the basic principles of experimental design.

	Have developed skills: # to examine the data to determine underlying structures; # to formulate statistical models for a range of practical situations; # to check the assumptions of a model in specific situations; # to use the computer to carry out standard statistical analyses; # to express the results of a statistical analysis in scientifically useful terms. *Appreciate:* # the importance of statistical methods for interpreting data; # the role and interplay of exploratory and formal aspects of data analysis; # the importance of experimental design; # the application of statistical software.
Assessment:	Up to 50 pages of written assignments 25% (due during semester); a 3-hour written examination 75% (held in the examination period).
Prescribed Texts:	None
Breadth Options:	This subject potentially can be taken as a breadth subject component for the following courses: # **Bachelor of Arts (https://handbook.unimelb.edu.au/view/2009/D09)** # **Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2009/F04)** # **Bachelor of Environments (https://handbook.unimelb.edu.au/view/2009/A04)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2009/M05)** 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 an appropriate computing package.
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. Students undertaking this subject will be required to regularly access an internet based computer and to use MINITAB for statistical analysis. Students undertaking this subject will be expected to be competent in the use of MINITAB statistical software.
Related Majors/Minors/ Specialisations:	Environmental Science