620-272 Applied Statistics for Optometrists

Credit Points:	12.50
Level:	2 (Undergraduate)
Dates & Locations:	2009, This subject commences in the following study period/s: Semester 2, - 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:	VCE Mathematical Methods 3/4.
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	Students may gain credit for only one of *Data Analysis 2,* 620-270 (prior to 2009), *Applied Statistics for Optometrists* and *Statistics for Mechanical Engineers.* Students who have completed *Linear Models* or *Applied Statistical Inference* 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 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
Subject Overview:	This subject lays the foundations for an understanding of the fundamental concepts of probability and statistics, as they relate to optometry. Students will learn about the importance of good study design in scientific research, how 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 will also learn to use the computer to carry out standard statistical analyses and to express conclusions in scientifically useful terms. Topics include: probability, including the concepts of incidence, prevalence, specificity, sensitivity and predictive probability; Bayes' theorem. Random variables and their properties: distribution, mean, variance; binomial and normal distributions; random sampling. Statistical inference: estimation; confidence intervals; hypothesis testing; determination of sample size. Correlation and regression: assumptions; method of least squares; hypothesis testing; confidence and prediction intervals; residuals; transformations; polynomial regression. Analysis of variance models (one-way and two-way models): model specification; assumptions; estimation and hypothesis testing; interaction; transformations; residuals; diagnostics. Design of experiments: randomisation; replication; blocking; standard designs including completely randomised and randomised block designs. Guidelines for supporting an argument for cause and effect based on observational data. Contingency tables: tests for association; odds ratios. Use of the statistical package Minitab.
Objectives:	.
Assessment:	Up to 50 pages of written assignments due during the semester (25%); a 3-hour written examination in the examination period (75%).
Prescribed Texts:	None

Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Notes:	This subject is available only to Bachelor of Optometry students.
Related Course(s):	Bachelor of Optometry