620-202 Statistics

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), and 11 one-hour computer laboratory classes (one per week) Total Time Commitment: 120 hours total time commitment.
Prerequisites:	*Probability* **Or** *Probability for Statistics*
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	Passing *Statistics* precludes subsequent credit for *Data Analysis 1* or *Experimental Design and Data Analysis*
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:	Prof Richard Mark Huggins
Subject Overview:	This subject introduces the theory underlying modern statistical inference and statistical computation. In particular, it demonstrates that many commonly used statistical procedures arise as applications of a common theory. This subject demonstrates the importance of the underlying mathematical theory of statistics and the use of modern computer software. Topics include random samples; sample characteristics; the sampling distributions of commonly used statistics; desirable properties of estimators; methods for the estimation of parameters of probability distributions, including maximum likelihood and Bayesian estimation; confidence intervals and prediction intervals; hypothesis testing; introduction to distribution free methods and goodness of fit tests, correlation and regression; the analysis of one-way and two-way classifications.
Objectives:	Students completing this subject should be familiar with the basic ideas of estimation and hypothesis testing and be able to carry out many standard statistical procedures using a statistical computing package. Students should develop the ability to fit probability models to data by both estimating and testing hypotheses about model parameters.
Assessment:	Up to 50 pages of written assignments due during the semester (20%); a 45-minute computer laboratory test held during semester (10%); a 3-hour written examination in the examination period (70%).
Prescribed Texts:	Hogg and Tanis, Probability and Statistical Inference. Seventh Edition, Prentice Hall, 2005.
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 should progressively acquire generic skills from this subject 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 a major statistical 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 are required to regularly use computers with the computer algebra system Maple and statistics package R installed. Students undertaking this subject are not assumed to have any special computer skills at the beginning. They will learn the basic skills of using Maple and R in the subject.
Related Majors/Minors/ Specialisations:	Economics Major Environmental Science Mathematics & Statistics Major