MAST10010 Data Analysis 1

Credit Points:	12.5
Level:	1 (Undergraduate)
Dates & Locations:	2015, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.
Time Commitment:	Contact Hours: 3 x one hour lectures per week, 1 x one hour practice class per week, 1 x one hour computer laboratory class per week. Total Time Commitment: Estimated total time commitment of 170 hours
Prerequisites:	Study score of 25 or more in VCE Mathematical Methods 3/4 or equivalent, or

Subject	Study Period Commencement:	Credit Points:
MAST10012 Introduction to Mathematics	Summer Term, Semester 1	12.50

Corequisites:	None
Recommended Background Knowledge:	None

Non Allowed Subjects:	Students may only gain credit for one of
	
	   # MAST10010 Data Analysis 1
	   # MAST10011 Experimental Design and Data Analysis
	   # ECON10005 Quantitative Methods 1
	
	Students who have completed any of the following may not enrol in this subject for credit
	
	   # MAST20005 Statistics
	   # MAST20017 Applied Statistics for Optometrists (prior to 2012)
	
	Bachelor of Science students are permitted to complete a maximum of three level-1 Mathematics and Statistics subjects. They are not permitted to complete all four of MAST10005, MAST10006, MAST10007 and MAST10010

Core Participation Requirements:	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry. It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability
Coordinator:	Ms Sharon Gunn
Contact:	First Year Coordinator **Email: fycoord@ms.unimelb.edu.au (mailto:fycoord@ms.unimelb.edu.au)**
Subject Overview:	This subject lays the foundations for an understanding of the fundamental concepts of probability and statistics required for data analysis. Students should develop expertise in some of the statistical techniques commonly used in the design and analysis of experiments, and will gain experience in the use of a major statistical computing package. They should develop skills in collecting random samples, data description, basic statistical inference including parametric

and nonparametric tests to compare population proportions and means, data manipulation and statistical computing. The methods will be illustrated using applications from science, engineering and commerce. Descriptive statistics, data manipulation and the implementation of the statistical procedures covered in lectures will be reinforced in the computer laboratory classes.

Sampling; introduction to experimental design; review of simple probability; estimation; confidence intervals; hypothesis testing including types of errors and power; inferences about means and proportions based on single and independent samples; matched pairs designs; introduction to nonparametric methods; contingency tables; regression; and analysis of variance.

Learning Outcomes:	Students completing this subject should: # Understand the importance of random samples and experimental design in scientific research; # Understand some fundamental concepts of statistical inference relating to confidence intervals and hypothesis testing; # Use quantitative and graphical methods to describe a set of data; # Develop expertise in the use of some common statistical techniques; # Become familiar with a major statistical computing package.
Assessment:	Ten online quizzes due at weekly intervals during semester (10%), two written assignments due during semester amounting to a total of up to 25 pages (10%), one 45-minute computer based test at the end of semester (10%), and a 3-hour written examination in the examination period (70%).
Prescribed Texts:	Jessica Utts and Robert Heckard, Mind on Statistics, 4th Edition, Cengage Learning, 2010.
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/2015/B-ARTS)** # **Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2015/B-COM)** # **Bachelor of Environments (https://handbook.unimelb.edu.au/view/2015/B-ENVS)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2015/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; and # 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 Environments
Related Majors/Minors/ Specialisations:	Environmental Science major Science-credited subjects - new generation B-SCI and B-ENG. Selective subjects for B-BMED