

UNIB10006 Critical Thinking With Data

Credit Points:	12.50
Level:	1 (Undergraduate)
Dates & Locations:	2012, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus. Lectures, practice classes, on-line materials.
Time Commitment:	Contact Hours: 3 x one hour lectures per week, 1 x one hour practice class per week. Total Time Commitment: Estimated total time commitment of 120 hours
Prerequisites:	None
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements of this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website: http://www.services.unimelb.edu.au/disability/
Coordinator:	Dr Robert Maillardet
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Subject Overview:	<p>This subject teaches students to become critical users of data-based evidence. Future journalists, political scientists, sociologists, lawyers, health professionals, psychologists, environmental scientists, business people, engineers, scientists and teachers will develop skills in identifying the strengths and weaknesses of arguments and reports based on quantitative evidence, and learn to evaluate reasoning that uses probabilistic ideas.</p> <p>Data-based evidence is found in the media, in academic research and in many aspects of everyday life. The subject examines ways of judging the quality of quantitative information, and the strength of conclusions drawn from it, including concerns in establishing causality. It discusses how variability may be characterised and modelled in a wide variety of settings including public opinion, health, sport, legal disputes, and the environment. It covers good and bad ways of examining evidence in data. The subject deals with judging the likelihood of events, common pitfalls in thinking about probability, measuring risk in medical contexts and quantifying uncertainty in conclusions. It describes how data-based evidence can contribute to the accumulation of knowledge.</p>
Objectives:	<p>On completion of this subject students should be able to</p> <ul style="list-style-type: none"> # think critically about quantitative data in a broad range of contexts; <p>and should understand</p> <ul style="list-style-type: none"> # the principles behind collecting data as evidence (through controlled experiments, surveys and observational studies); # how to examine the evidence in data (including graphical representation, summary measures, and the concepts of variation and modelling);

	<ul style="list-style-type: none"> # how to think about and describe the uncertainty in data (including probability, risk and psychological influences affecting human judgements about risk); # how to draw conclusions from the evidence in data (including confidence intervals, p-values and meta analysis); # how to critically assess media reports based on quantitative data.
Assessment:	Three written assignments due at regular intervals during semester amounting to a total of up to 600 words (15%), 15 on-line assessment tasks at regular intervals during semester (20%), a group project involving production of a poster and a 4-minute oral presentation due after mid-semester (10%), one 1200 word written assignment due at the end of semester (15%), and a 2 hour written examination in the examination period (40%).
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"> # <u>Bachelor of Arts</u> (https://handbook.unimelb.edu.au/view/2012/B-ARTS) # <u>Bachelor of Biomedicine</u> (https://handbook.unimelb.edu.au/view/2012/B-BMED) # <u>Bachelor of Commerce</u> (https://handbook.unimelb.edu.au/view/2012/B-COM) # <u>Bachelor of Environments</u> (https://handbook.unimelb.edu.au/view/2012/B-ENVS) # <u>Bachelor of Music</u> (https://handbook.unimelb.edu.au/view/2012/B-MUS) # <u>Bachelor of Science</u> (https://handbook.unimelb.edu.au/view/2012/B-SCI) # <u>Bachelor of Engineering</u> (https://handbook.unimelb.edu.au/view/2012/B-ENG) <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:	Students with a breadth of knowledge across disciplines must be able to understand and critically evaluate the methodologies and research findings based on data. This subject aims to provide students with these critical thinking skills. It will be important for any student wishing to develop generic research and problem-solving skills. The subject will expose students to the application of data-based evidence across a range of disciplines, and contribute to their developing interdisciplinary understanding.
Related Breadth Track(s):	Statistical Literacy Communication and evidence