

## 100-level SUBJECT HANDBOOK ENTRY 2008 – New Generation Subjects

<b>Code:</b>	620-168
<b>Title of the subject</b>	Experimental Design & Data Analysis
<b>Credit points</b>	12.5
<b>Coordinator</b>	Karen Baker
<b>Semester of offer</b>	2
<b>Prerequisites and/or corequisites</b>	
<b>Mode of delivery</b>	Lectures, tutorials and computer laboratory classes
<b>Contact hours</b>	36 one-hour lectures (three per week), 11 one-hour tutorials (one per week), 11 one-hour computer laboratory classes (one per week)
<b>Estimated total time commitment</b>	120 hours
<b>Description</b>	<p>This subject provides an understanding of the fundamental concepts of probability and statistics required for experimental design and data analysis in the health sciences. Initially the subject introduces common study designs, random sampling and randomised trials as well as numerical and visual methods of summarising data. It then focuses on understanding population characteristics such as means, variances, proportions, risk ratios, odds ratios, rates, prevalence, and measures used to assess the diagnostic value of a clinical test. Finally, after determining the sampling distributions of some common statistics, confidence intervals will be used to estimate these population characteristics and statistical tests of hypotheses will be developed. The presentation and interpretation of the results from statistical analyses of typical health research studies will be emphasised.</p> <p>The statistical methods will be implemented using a standard statistical computing package and illustrated on applications from the health sciences.</p>
<b>Assessment</b>	Up to 36 pages of written assignments 15% (due during the semester); a 45-minute computer-based test 5% (held during semester); a 3-hour written examination 80% (held in the examination period).
<b>Prescribed texts</b>	M. M. Triola and M. F. Triola, <i>Biostatistics for the Biological and Health Sciences</i> , Boston, Pearson, 2006
<b>Notes</b>	<p>This subject is only available to students enrolled in the Bachelor of Biomedicine degree.</p> <p>Students may only gain credit for one of [07]620-152, 620-159, [07]620-160 or 620-168.</p> <p>Students who have completed [07]620-202, [07]620-270 or [07]620-272 may not enrol in this</p>

	subject for credit.
<b>Subject objectives</b>	<p>Students completing this subject will:</p> <ul style="list-style-type: none"> <li>• Understand the importance of random samples and experimental design in research in the health sciences.</li> <li>• Understand some fundamental concepts of statistical inference relating to confidence intervals and hypothesis testing.</li> <li>• Be able to use quantitative and graphical methods to describe a set of data.</li> <li>• Have developed expertise in the use of some common statistical techniques.</li> <li>• Have become familiar with a major statistical computing package.</li> </ul>
<b>Generic skills</b>	<p>In addition to learning specific skills that will assist students in their future careers in the health sciences, they will have the opportunity to develop, generic skills that will assist them in any future career path. These include</p> <ul style="list-style-type: none"> <li>• problem-solving skills: the ability to engage with unfamiliar problems and identify relevant solution strategies;</li> <li>• 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;</li> <li>• collaborative skills: the ability to work in a team;</li> <li>• time-management skills: the ability to meet regular deadlines while balancing competing commitments;</li> <li>• computer skills: the ability to use an appropriate computing package.</li> </ul>
<b>Special computer requirements</b>	Appropriate statistical computing software installed in computer laboratories.