# MAST10011 Experimental Design and Data Analysis

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| **Credit Points:** | 12.50 |
| **Level:** | 1 (Undergraduate) |
| **Dates & Locations:** | 2012, Parkville<br>This subject commences in the following study period/s:<br>Semester 1, Parkville - Taught on campus.<br>Semester 2, Parkville - Taught on campus.<br>Lectures, practice classes and computer laboratory classes. |
| **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 120 hours |
| **Prerequisites:** | None |
| **Corequisites:** | None |
| **Recommended Background Knowledge:** | None |
| **Non Allowed Subjects:** | Students may only gain credit for one of<br># MAST10010 Data Analysis 1<br># MAST10011 Experimental Design and Data Analysis<br># ECON10005 Quantitative Methods 1<br># 620-152 Introduction to Biomedical Statistics (prior to 2008)<br># 620-160 Experimental Design and Data Analysis (prior to 2008)<br><br>Students who have completed any of the following may not enrol in this subject for credit<br># MAST20005 Statistics<br># MAST20017 Applied Statistics for Optometrists (prior to 2012)<br># 620-270 Applied Statistics (prior to 2009) |
| **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:** | Assoc Prof Ray Watson |
| **Contact:** | First Year Coordinator<br>**Email: fycoord@ms.unimelb.edu.au (mailto:fycoord@ms.unimelb.edu.au)** |
| **Subject Overview:** | 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. |

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| | The statistical methods will be implemented using a standard statistical computing package and illustrated on applications from the health sciences. |
| **Objectives:** | On completion of the subject, students should be able to:<br># analyse standard data sets, interpreting the results of such analysis and presenting the conclusions in a clear and comprehensible manner;<br># understand a range of standard statistical methods which can be applied to biomedical sciences.<br># use a statistical computing package to analyse biomedical data;<br># choose a form of epidemiological experimental design suitable for a range of standard biomedical experiments. |
| **Assessment:** | One written assignment of up to 10 pages due in the second half of semester (5%), eight to twelve homework quizzes (a combination of written and oneline) due at regular intervals during semester (10%), one 45-minute written computer laboratory test held during semester (5%), and a 3-hour written examination in the examination period (80%). |
| **Prescribed Texts:** | None. |
| **Recommended Texts:** | M. M. Triola and M. F. Triola, Biostatistics for the Biological and Health Sciences, Boston, Pearson, 2006. |
| **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 |
| **Generic Skills:** | 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:<br># problem-solving skills: the ability to engage with unfamiliar problems and identify relevant solution strategies;<br># 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;<br># collaborative skills: the ability to work in a team;<br># time management skills: the ability to meet regular deadlines while balancing competing commitments;<br># computer skills: the ability to use statistical computing packages. |
| **Notes:** | This subject is only available to students enrolled in the Bachelor of Biomedicine degree or the Bachelor of Biomedical Science (pre-2008 degree) |
| **Related Course(s):** | Bachelor of Biomedicine |