

## Statistics and Analysis (Elective)

<b>Credit Value:</b>	10
<b>Course Organiser:</b>	Dr Pamela Warner
<b>Course Instructor(s):</b>	Dr Pamela Warner
<b>Time:</b>	Semester 2 Weeks 1-10 Mondays 9-11 (Greenfield Computer lab) & Thursdays 4-5pm (SSLT)
<b>Short course description:</b>	This 2 <sup>nd</sup> -level course will consolidate understanding and build on skills acquired in semester 1. It will extend coverage to a broader range of key statistical concepts/ methods, while at the same time enhancing conceptual understanding of the introductory statistical methods. It will inculcate skills to select and apply these methods to real data to achieve appropriate descriptive summary, estimation of effects, hypothesis-testing and graphical presentation, with a strong focus on appropriate interpretation of findings. In parallel, the course will provide intermediate level training in analysis and reporting/graphing (using SPSS, Excel and/or calculators).
<b>Course prerequisites:</b>	Basic Skills in Spreadsheet and Stats Software Introduction to Statistics & Critical Appraisal (core)
<b>Aim:</b>	To provide students with a deeper understanding of basic methods of data summary and statistical inference as applied in public health and medical research, and to provide experience and training in applying these appropriately to data, and in reporting findings.
<b>Learning objectives:</b>	By the end of the course students will be able to: <ul style="list-style-type: none"><li>▪ Demonstrate an understanding of the value of confidence intervals in data reporting and of the uses and abuses of hypothesis testing.</li><li>▪ Use both a calculator and the software package 'SPSS' to perform basic statistical analyses, and Excel and SPSS to draw graphs</li><li>▪ Select and apply an appropriate method of analysis for a variety of research designs and data types, and interpret the findings.</li><li>▪ Assess measurement quality.</li><li>▪ Understand the issues in sample size estimation and undertake simple sample size calculations</li><li>▪ Calculate confidence limits for ratios, and for paired and independent group differences in means and proportions.</li><li>▪ Understand/ undertake:<ul style="list-style-type: none"><li>– student's t-test in paired or independent samples</li><li>– chi-squared tests for association for two-way tables, paired proportion data and trends</li></ul></li></ul>

- non-parametric analytic methods, including correlation
- sample size estimation for simple study designs

**Teaching methods:**

The course teaching is designed to allow each student to work at her/his own pace, with tutor support. The main engagement with new material is via specified preparatory readings and computer laboratory practicals, with tutors in attendance. There are minimal formal lectures but there will be overview lectures and handouts bringing out key points in the material studied each week (readings and laboratory/calculator exercises). Optimum learning will require full engagement with preparatory reading, computer practicals and calculator exercises. Throughout the entire course, formative quizzes/tasks will enable students to monitor their learning.

**Assessment:**

Examination with structured questions.