Statistics   **NST IB Psychology 2003–4**

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Welcome to the statistics part of the NST IB Experimental Psychology practical course. NST psychology students generally learn statistics in each of the three years, and the courses fit together roughly like this:

NST IA Elementary Maths for Biologists (EMB) (or better)	*Material including algebra, powers, logarithms, trigonometry, calculus, descriptive statistics, basic hypothesis testing. (More advanced NST students will have taken Quantitative Biology, or NST Maths proper.)*
NST IB Psychology	Some students joining Part IB Psychology have not done NST IA, and some doing Part II have not done Part IB. Therefore, we state the background knowledge required for Part IB and Part II explicitly. For Part IB, the mathematical level assumed is that taught in the NST IA EMB course; the actual background knowledge required is set out in Handout 1.
	You will receive a copy of the **statistical tables and formulae** booklet for use throughout the course.
	We will cover: • Revision of IA material (including statistical terminology and principles of experimental design, plotting data, descriptive statistics with measures of central tendency and variation, the normal distribution, probability, and the logic of null hypothesis testing). **Handout 1.** • Correlation and regression. **Handout 2; practical 1.** • Difference tests (paired versus unpaired; parametric versus nonparametric). **Handouts 3&4; practicals 2&3.** • Binomial, sign, and χ^2 tests (including goodness-of-fit and contingency tests). **Handout 5; practical 4.** • Revision. **Practical 5.**
NST II Psychology	• *Revision of IB material (background; difference tests; χ^2 tests; regression).* • *Data handling; transformations and dealing with outliers.* • *Analysis of variance (ANOVA) techniques.*

In each practical, we will
- cover the basic theory behind a statistical procedure or test (supported by a comprehensive handout)
- use the procedure or test to analyse **data that you have collected in a practical class (so bring it along).** We try to make sure that we pair the statistics practicals with the experimental classes so that we cover statistical tests as you start to need them for the experimental write-ups. This will become apparent as we go along.
- have a go at some examples relevant to the topic. (At some point we'll go through some real past exam questions, as well.)

For each practical, you will need
- your data
- a calculator
- previous handouts — at a minimum, the *Tables and formulae.*

The handouts will also be placed on the web (from www.psychol.cam.ac.uk → Teaching Materials → IB, and also at www.pobox.com/~rudolf/psychology).

There is a **compulsory statistics question in the exam.** You will be allowed to use your calculator **as long as it is an approved model** (see Handout 1). You will also be supplied with a clean copy of the **statistical tables and formulae** in the exam, so you don't have to memorize formulae or procedural details, but you do have to appreciate what a test might tell you, and which test is appropriate for a particular situation. For details of the format of the IB exams, see www.psychol.cam.ac.uk → Undergraduate Information → Examination Information.

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