



A-level Statistics

Board and Specification: **Edexcel AS further Mathematics**
Staff: **Mr Simon Reid (KS5 Coordinator)**

Subject Specific Entry Requirements:

- GCSE Grade 6(B) in Mathematics and English.
- Students should be fluent in their number and data handling skills from GCSE.
- You will be expected to purchase a Casio fx-991EX Classwiz

What skills are required of students?

Recall of learnt facts, application of new skills, extracting information from texts, deciphering “what do I need to do?” problem solving, use of a calculator, formal written methods, interpretation of solutions, choosing the most appropriate model, communicating methods clearly, drawing appropriate diagrams, identifying alternative approaches and checking the ‘reasonableness’ of their answer.

Course Outline

The content of the A level statistics course is delivered over 2 years in lessons and through home learning tasks with 3 examinations being sat at the end of Year 13. Students will be assessed regularly to track progress.

Year 12: Students will work with real data sets extending the work they have covered in GCSE Maths, such as the calculation of the numerical measures including mean, median and mode, and the practical applications of correlation and regression, including Time Series Analysis in the world of business. Elementary probability theory is also studied, and the Binomial and Normal distributions are introduced. Different methods of sampling are studied, and we also study basic hypothesis testing. Topics which appear in such subjects as Biology, Psychology, Geography and Medicine include Chi-squared Contingency Tables, Spearman’s Rank Correlation Coefficient, and the Wilcoxon tests.

Year 13: The work on basic probability is extended to include Bayes' theorem and in addition to revisiting the binomial and normal distributions we also introduce the Poisson and exponential distributions. We test the goodness of fit for various distributions and carry out hypothesis tests for two samples and paired samples. In addition, we consider the industrial and manufacturing application of statistics, including experimental design and Analysis of Variance.

****This course will suit those students who enjoy applying their numerate skills without the need to employ algebraic techniques.**

What other A levels does this subject connect well with?

Psychology, Geography, Chemistry, Biology and Business all require a good understanding of the application of various statistical processes in order to process and interpret data. The statistics covered in this course supports the content of these A levels.

Career and Progression Opportunities

There is a countrywide shortage of people with strong statistical skills, for example Medical Statisticians, so career prospects are enhanced by taking this course. A number of degree programmes also contain significant amounts of statistics. These include Psychology, Biology, Business Studies, Management Science, Medicine, Dentistry, Geography, I.T., Government and Politics, Pharmacy and others.

What type of work will you do at home?

Home learning tasks could involve embedding the learning from the lesson using questions from text books or worksheets from alternative resources or from past papers. Tasks could also involve pre-reading or revision in preparation for a test or research into a topic. On occasion, students may be asked to prepare a task or an activity that will be used in a subsequent lesson. Students are expected to undertake 1 hour of independent study for every hour of teaching. Some topics may also be studied using computers or a graphics calculator.

Assessment - Examining Board – Edexcel. No Coursework. All three papers to be sat at the end of Year 13.

Paper 1: Data and Probability (*Paper code: 9ST0/01) Written examination: 2 hours 33 $\frac{1}{3}$ % of the qualification.

Paper 2: Statistical Inference (Paper code: 9ST0/02) Written examination: 2 hours 33 $\frac{1}{3}$ % of the qualification.

Paper 3: Statistics in Practice (Paper code: 9ST0/03) Written examination: 2 hours 33 $\frac{1}{3}$ % of the qualification.