A Level Mathematics and Further Mathematics

Why should I study Mathematics and Further Mathematics?

Mathematics is the study of abstract patterns and problem solving. It is the development of another language in which we communicate concepts, situations and ideas. It is this 'abstract' nature that means that its methods and results are applicable in almost all aspects of our physical world.

Mathematics is the language of the scientific world and heavily supports many other subjects. It is one of the most desired subjects for the widest range of University courses and employers; Mathematicians are problem solvers, logicians, numerically astute and accurate, making them eminently employable in a wide range of fields.

Exam Board

Edexcel

Prerequisite for study

Mathematics

Grade 7 (8 preferred) in GCSE/IGCSE Maths required

Further Mathematics

Grade 8 (9 preferred) in GCSE/IGCSE Maths required

Grade 5 in English Language required

NB. Further Maths can only be studied in conjunction with A Level Maths.

What will I study?

Single Mathematics

All students will follow the same two year A Level Mathematics course, and the public examinations will take place at the end of the two year course.

Pure Mathematics:
This comprises of two thirds of the total content of the course. It focuses on such topics as algebra, calculus, trigonometry, vectors and transformation mathematics.

Statistics:
This comprises one sixth of the course. This is the application of pure mathematics to matters of uncertainty and probability. In the second year, students go on to study hypothesis testing and how certain one can be of the conclusions drawn from data.

Mechanics:
This comprises one sixth of the course. This deals with the way we can use equations to solve problems relating to physical objects and their motion and interaction; things that move and rotate with each other.

Double Mathematics

Double Maths consists of two distinct A Levels: A Level Mathematics (the same course as Single Mathematics) and A Level Further Mathematics. Both A Levels will be sat at the end of Year 13, but they are studied in parallel with Mathematics studied in Year 12 and continue into Year 13. The Further Mathematics course consists of 4 modules:

Pure Mathematics:
The modules, Further Core Pure 1 and Further Core Pure 2, each make up 25% of the course. Topics studied will include differential equations, further vectors, hyperbolics, complex numbers, polar geometry, power series and conics.

Further Applied Mathematics:
Students will sit two out of the three applied modules we offer. These comprise Further Mechanics 1, and either Further Statistics 1 or Decision Maths 1, each making up 25% of the course. (The mix will be determined by the needs of students taking the course.)

The mechanics element contains topics such as centres of mass, collisions, work and energy, elasticity, dynamics and kinematics, statics and circular motion. The statistics element contains topics such as random variables, hypothesis testing, Chi-squared, confidence intervals and probability generating functions. The decision maths element covers critical path analysis, algorithms and graph theory, and linear programming.

AS Further Mathematics

If a student has taken Further Maths in Year 12 and feels that A Level Further Maths will be too challenging for them in Year 13, it may be possible to elect to study AS Further Mathematics.

How will I be assessed?

Single Mathematics consists of three exams, two on the pure syllabus and one combined mechanics and statistics paper. All papers carry equal weight. Further Mathematics students will sit the same three exams as single Mathematics students, plus four Further Mathematics papers, one for each module.

University and beyond

If you're thinking about studying a Science, Engineering or Economics degree at university, you'll almost certainly find that you'll be glad you studied A Level Maths. Students are also advised to consult with university department websites to determine whether Double or Single Maths is considered to be essential or preferred for their chosen course of study. Further Mathematics is usually required for Engineering, Computing, Physics or Economics at Oxbridge, LSE and Imperial College.