



A Level Further Mathematics Course Outline

Overview

Students with a particular interest in mathematics can choose to take a second A Level in maths called Further Maths, with some choosing this as a fourth A Level. Further Mathematicians, as well as learning additional compulsory topics in pure maths such as complex numbers and proof by induction get a choice of studying further statistics, mechanics or decision maths. Many topics will require students to apply their knowledge to solving real world problems such as modelling the motion of a diving board as a second order differential equation.

Students who do not need a full A Level in Further Maths but are interested in going beyond A Level Maths can follow the course for the first year in order to obtain an AS qualification in the subject.

Course Structure & Summary of Unit Content

Further Mathematics Year 1

Pure Core topics: series; complex numbers; numerical solution of equations; coordinate systems, matrix algebra, proof.

Applied topics – a choice of two from:

- Further Pure – inequalities, t-formulae, conic sections.
- Decision – algorithms, critical path analysis, linear programming.
- Further Statistics – Poisson distribution, combining Normal distributions.
- Further Mechanics – collisions, conservation of energy, elasticity.

Further Mathematics Year 2

Pure Core topics: inequalities; series, first order differential equations; second order differential equations; further complex numbers, Maclaurin and Taylor series.

Applied topics – further work on the same two options chosen in Year 1.

Assessment:

Four equally weighted papers of 1.5 hours each

Paper 1 – Core 1 – pure topics from either year of the course

Paper 2 – Core 2 – pure topics from either year of the course

Paper 3 – option paper 1

Paper 4 – option paper 2

All calculators require a calculator as per A Level Maths.

Entry Qualifications

For Further Mathematics students will require Grade 8 or 9 at GCSE. A grade 7 will be considered for students who wish to take the AS as a fourth subject. Note that students opting to take Further Mathematics must also take Mathematics A Level as a separate option.

Career Prospects

Mathematicians are highly employable in a wide range of fields. They are valued for their problem solving and analytical skills. An A Level in Further Mathematics is acceptable as an entry qualification for the vast majority of college and university courses in just about any subject. It is required by many university maths courses and is 'highly desirable' as at least an AS for some science and economics courses.