Further Mathematics **Exam board: Edexcel**

Why take Further Maths?

BECAUSE MATHEMATICS IS SO IMPORTANT − it is the only subject with a second A Level, extending the standard A level in both breadth and depth.

MATHEMATICAL ABILITY IS A VERY VALUBLE ASSET − if you have it, make the most of it!

It will develop your problem-solving and analytical skills, so valued by employers, and also develop areas of the brain untouched by other subjects, and probably means you end up earning more than the rest of us! Further Maths A Level will give you a huge advantage when applying to the best universities in the country for Maths and Science-based degrees

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Who is the course for?

Mathematicians quite simply. The course is aimed at anyone of a high mathematical ability that has a passion for the subject and wishes to deepen their knowledge and understanding of it, adding the qualification as a very powerful string to their bow.
It does everything the regular maths course does, and then extends it; giving you a flavour of the sort of advanced maths you would meet if you were to study mathematics at university, or actually cover much of the maths you would meet at university if you were to study engineering or a science-based degree.

Comments from students who have studied this subject in the past

"I chose to take Maths and Further Maths because they are considered amongst the highest calibre A Levels by the top ranking universities, and are highly prized by employers". ***Lucy Palmen (2015)***

"Studying Mathematics provides you with a set of tools that can be applied to many different disciplines. Logarithms can be used in Biology, Game Theory in Economics, and Calculus in Physics. It is for this reason that I chose to follow A Level courses in both Mathematics and Further Mathematics". ***Alex Curtis (2015)***

What GCSE grades do I need for further mathematics?

Students who study Further Maths at A Level will usually have achieved a A or A* at GCSE and have followed the Higher Course.

What skills do I need to do well?

As with regular maths, students studying further maths are hard-working, well organised and determined. In addition, a greater degree of independence is needed to succeed at this course. The students who do well at Further Maths A level are those who are willing to persevere when things get difficult and studious enough to independently seek out help.

What resources are available?

At Chauncy, we follow the Edexcel syllabus. Fortunately for us, the exam board produces a series of books written especially for this course. Students make full use of two or three websites dedicated to A Level Maths/Further Maths – all with a multitude of resources; past papers, worked solutions, revision notes, practice questions, etc.

Summary of unit content:

AS Level

Unit	Summary of content	Weighting of AS Level
Further Pure 1 (FP1)	Series; complex numbers (numbers that don't exist?); numerical solutions of equations; matrix algebra (we wear trench coats and long dark glasses for this topic); proof.	33.3%
Statistics (S1)	Mathematical models in probability and statistics; representation and summary of data; probability; correlation and regression; discrete random variables; discrete distributions; the Normal distributions.	33.3%
Decision 2 (D2)	Transportation problems; allocation (assignment) problems; the travelling salesman; game theory; further linear programming, dynamic programming; flows in networks.	33.3%

A2 Level

Unit	Summary of content	Weighting of A2 Level
Further Pure 2 (FP2)	Inequalities; series; first and second order differential equations (the maths behind modelling rates of change in the real world); further complex numbers; Maclaurin and Taylor series. FP2 and FP3 are a fair chunk of first year degree level maths - really exciting stuff!	33.3%
Further Pure 3 (FP3)	Further matrix algebra; vectors (3-dimensional planes); hyperbolic functions; differentiation and integration of complex expressions and inverse trigonometric ratios; further coordinate systems.	33.3%
Statistics 2 (S2)	The Binomial and Poisson distributions; continuous random variables; continuous distributions; samples; hypothesis testing - how reliable is your prediction?	33.3%

Each module (or unit) is examined by a one and a half hour exam, all of which are sat in the summer of both AS and A2 Level years.

AS and A2 Level carry equal weighting towards the full A Level.
There is no coursework as part of this course.

Regular assessments throughout the course ensure students and teachers alike are able to chart student progress and intervene when necessary.

I Rooke, Head of Maths