Course	Further Maths
Exam Board	AQA
About the subject	Further mathematics is designed for students with an enthusiasm for mathematics, particularly those planning to go on to degrees in mathematics, engineering, the sciences and economics. However, it is also beneficial to students interested in careers such as medicine as it includes more advanced study of statistical methods which eases that transition to the skills required for analysis of data. Often, the study of further mathematics is a requirement for entry to the top maths degrees or can lead to a lower grade offer being made for entry to these universities.

The qualification is both deeper and broader than A level mathematics. AS and A level further mathematics build from GCSE level and AS and A level mathematics. The A level further mathematics core content introduces complex numbers and matrices, fundamental mathematical ideas with wide applications in mathematics, engineering, physical sciences and computing. The non-core content will be following the option of 'Statistics and Mechanics'. Mechanics includes the study of dimensional analysis and movement including circular motion and collisions that are key to engineering, sports science and the study of any movement. The statistics options are appropriate in the study of economics as they enable data to be analysed in a more sophisticated way.

The new A level further mathematics specification will be taught for the first time from September 2017. It is graded from A to E for AS level and A* to E for A level. You will sit the AS level papers in the summer of year 12 and then continue with the remaining A level content which will be assessed at the end of the second year. The results of the AS examination do not contribute towards the A level assessment but clearly if you do well with this exam you will have good foundations on which to build for the A level assessment in year 13.

This qualification is taken as a fourth subject and not one of your 3 main choices. In past years students in Year 13 have opted to then study further mathematics as one of their three core options.   However, you must be studying A level Mathematics. |
| Units studied | AS Level (assessed Summer 2018)
Core content

Proof   Matrices
Complex numbers   Further algebra and function
Further vectors   Further calculus
Polar co-ordinates   Hyperbolic functions
Mechanics Content
Dimensional analysis   Momentum and collisions
Work, energy and power   Circular motion
Statistics content
Discrete random variables   Continuous random variables
Chi tests for association   Type I and II errors
Confidence intervals   Poisson distribution

A Level (Assessed Summer 2019) - You will continue to study the topics from AS |

level in more depth but in addition you will also study

<u>Core content</u>

Differential equations	Trigonometry
Numerical methods	

<u>Statistics content</u>

Expectation	Exponential distributions
Inference	

<u>Mechanics content</u>

Centres of mass and moments

Assessment	AS level is assessed via two written papers at the end of year 12. Each paper lasts 1 hour 30 minutes and each is worth 50% of the AS assessment. Paper 1 covers the core maths topics whilst Paper 2 assesses mechanics and statistics. A level is assessed by 3 written papers at the end of year 13. Each paper lasts 2 hours and each is worth 33 1/3% of the A level assessment. The results from AS ***do not*** contribute to the A level result in any way but will be reassessed in the A level exams. Paper 1 and 2 assess core maths whilst paper 3 assesses mechanics and statistics.
College Entry Requirements:	Minimum of 5 higher grades at GCSE, including English and maths (minimum grade 5).
Subject Specific Requirements	GCSE in Mathematics with success at least at a grade 7 standard, grade 8 is preferable. Students must be self-motivated and willing to put in the time needed to succeed as the course is one of the most difficult on offer.
Prior knowledge	A strong grasp of algebra is essential and you should be confident with solving equations (both linear and quadratic), changing the subject of a formula, simultaneous equations, substitution and algebraic fractions. Revision of grade 8/9 number work is also advisable, in particular indices and surds.
Career links	A qualification in further maths is looked on favourably by universities and is essential for courses in Engineering, Physics, and Architecture and, of course, Maths. It is highly advantageous for courses in Computing, Economics, Finance and Architecture.