Curriculum summary

Further Mathematics A Level
For our gifted mathematicians we also offer A level Further mathematics. This course could prove invaluable to any student wishing to study mathematics or a mathematics related subject at a top University.

The course encompasses four modules; two pure and two applied.
Core Pure Mathematics 1 and 2 – these modules enable students to explore more algebra topics including matrices, imaginary numbers, polar coordinates, hyperbolic functions, inverse hyperbolic functions, first and second order differential equations including system of differential equations, vector geometry of 3d planes and damped simple harmonic motion.
Decision 1– Pupils will study algorithms on graphs; the route inspection problem; critical path analysis; travelling salesperson problem. linear programming. In this module they will learn problem solving techniques used in manufacturing, profit maximisation and many other industries as well as understanding tools widely used in the field of computer science.
Further Statistics 1 – This extends the work students did in Statistics 1 (in Mathematics A level). Topics included in this module are: Poisson distributions, geometric and negative binomial distribution, probability generating functions, Quality of tests, Central Limit Theorem. Also extends on hypothesis testing and Chi-squared tests.

Assessment in the A Level Further mathematics course is completely by examination and student sit their exams at end of second year (in year 13). Each module exam lasts for One and half hours and students are allowed to use calculators in all exams.

Programme of Study

Year 12

AUTUMN 1st HALF TERM

Core Pure (CP1)	Decision (D1)
Teacher 1 **(4 Lessons per week)**	**Teacher 2** **(2 Lessons per week)**
Complex Numbers Argand Diagrams Matrices Linear Transformations Proof by Induction	Algorithms Graphs and Networks Algorithms on Graphs

AUTUMN 2nd HALF TERM

Core Pure (CP1)	Decision (D1)
Teacher 1 **(4 Lessons per week)**	**Teacher 2** **(2 Lessons per week)**
Series Roots of Polynomials Vectors Volumes of Revolutions	Linear Programming Route Inspection Critical Path Analysis

SPRING 1st HALF TERM

Further Statistics (FS1)	D1 & FS1
Teacher 1 **(4 Lessons per week)**	**Teacher 2** **(2 Lessons per week)**
Discrete random Variable Poisson distribution Hypothesis testing	Consolidation D1 Chi square tests

SPRING 2nd HALF TERM

Re-teach & Revision	
Teacher 1 **(4 Lessons per week)**	**Teacher 2** **(2 Lessons per week)**
CP1 & FS1	D1

SUMMER 1st HALF TERM

Preparation for AS exams	
Teacher 1 **(4 Lessons per week)**	**Teacher 2** **(2 Lessons per week)**
CP1 & FS1	D1

SUMMER 2nd HALF TERM

Core Pure (CP2)	
Teacher 1 **(4 Lessons per week)**	**Teacher 2** **(2 Lessons per week)**
Complex Numbers Series	Hyperbolic Functions section 6.1 & 6.2 only

Year 13

AUTUMN 1st HALF TERM

Recap P2, CP1 & 2	
Teacher 1 (4 Lessons per week)	**Teacher 2 (2 Lessons per week)**
Complex Numbers Differentiation integration (P2) Methods of Calculus Polar Coordinates	Differentiation integration (P2) Hyperbolic Functions Volumes of Revolution

AUTUMN 2nd HALF TERM

CP2 & FS1	
Teacher 1 (4 Lessons per week)	**Teacher 2 (2 Lessons per week)**
Methods in Differential equations Modelling with Differential equations Quality of tests	Central Limit theorem Geometric and Negative Binomial distribution Probability Generating Functions

SPRING 1st HALF TERM

FS1 & D1	
Teacher 1 (4 Lessons per week)	**Teacher 2 (2 Lessons per week)**
Quality of tests Simplex Algorithm Route inspection and CPA	Probability Generating Functions Travelling Sales persons problem

SPRING 2nd HALF TERM

Re-teach & Revision	
Teacher 1 (4 Lessons per week)	**Teacher 2 (2 Lessons per week)**
CP1, CP2 & FS1	D1 & FS1

SUMMER 1st HALF TERM

Preparation for final exams	
Teacher 1 (4 Lessons per week)	**Teacher 2 (2 Lessons per week)**
CP1, CP2 & FS1	D1 & FS1