Mathematics and Further Mathematics

COURSE CONTENT

The A level consists of a mixture of pure and applied topics. Two thirds of the material devoted to the Pure Maths element and one third to the applied element. The applied aspect of the course is comprised of topics in Statistics and Mechanics. The aim of the course is to enable students to apply mathematical ideas to solve problems in a range of contexts and to be able to reason mathematically in coming to conclusions. Students will be expected to take responsibility for their learning within a supportive and caring environment.

Pure Mathematics topics are:
Proof
Algebra and Functions
Coordinate Geometry in the (x,y) plane
Sequences and Series
Trigonometry
Exponentials and logarithms
Differentiation
Integration
Numerical Methods
Vectors

Statistics topics are:
Sampling
Data Presentation and Interpretation
Probability
Statistical Distributions
Hypothesis Testing

Mechanics topics are:
Quantities and Units in Mechanics
Kinematics
Forces and Newton's laws
Moments

ESSENTIAL STUDENT QUALITIES

Students will need to be very comfortable with the more challenging GCSE concepts, algebra in particular. ***For this reason, students will need to have at least a grade 7 at GCSE Maths.***

EXAMINATION/ASSESSMENT DETAILS

There are 3 two hour exams at the end of the two year course. The assessment will consist of two papers of pure maths and one paper of applied maths. You are allowed to use a calculator in all of the assessments.

WORK OUTSIDE OF CLASS

Homework is set regularly and it is essential to keep on top of the heavy workload. You should expect to do at least as much again outside of lesson time. Staffed support sessions are available one night after school but students are welcome to seek help whenever it is needed.

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MATERIALS

Students will be required to purchase their own text book, details will be given at a later date, and a suitable calculator. The calculator will need to have an iterative function and the ability to compute summary statistics and access probabilities from standard statistical tables. We will provide information on an appropriate model at a later date and will be making a bulk order if you would like to purchase a calculator through the school, which usually works out cheaper.

COMPLEMENTARY SUBJECTS/FUTURE

Mathematics can be taken as a discrete subject at university and is also a key component of undergraduate courses such as Physics, Engineering, Economics, Business, Computer Science and Architecture.

Further Mathematics

The Further Mathematics option will give a second A level in Mathematics and is very useful for those students who are considering doing Mathematics or a related subject at university. This course probes deeper and wider into the areas that the A level Maths covers and also covers topics not covered by the single A level such as Complex Numbers and Differential Equations, as an example. ***Students wanting to do Further Mathematics would be expected to achieve a grade 8 or better at GCSE Maths.***

Mathematical Studies is an AS course studied across 2 years, which will allow students with a grade 6 GCSE to continue their study of Mathematics to support their A level subjects. This course is taught across the BSV Consortium.