Name of Subject -

A level Mathematics

A-level mathematics is an exciting but demanding course. This qualification requires students to demonstrate the overarching knowledge and skills contained in problem solving, modelling, language and proof. These must be applied, along with associated mathematical thinking and understanding, across the whole of the detailed content.

Which Examination Specification is Studied for this Course?

AQA A level Mathematics 7357

The Ofqual qualification accreditation number (QAN) is 603/1164/2.

AQA Specification

Why should I study this course?

In A level mathematics you get the chance to take the next step with your skills in algebra and look more closely at how functions work in the Cartesian Plane. Moreover, you will begin to analyse the rates at which different functions change in a range of contexts and use this to solve problems.

 Think you know trigonometry? Think again! You'll get to use trigonometric functions to model such things as tidal patterns and electric current.

 The course also includes areas of applied mathematics. Here there is a strong overlap with physics, where you'll look at Newtonian mechanics to model real life situations in two dimensions. The other applied element of the course is statistics where you'll analyse a large data set during the course of the year applying many statistical techniques.

Who is suitable to study this course?

Any student with a passion for developing their knowledge whilst deepening their understanding in mathematics. Students must be committed to their studies as this course requires dedication and a strong work ethic.

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You will have been studying higher tier maths at GCSE. If you would like to continue studying maths at KS5 but have been working on foundation at GCSE level 3 Core Mathematics would be a great option for you.

What GCSE Qualifications Support the Study of this Course?

GCSE Mathematics, GCSE Physics and GCSE Statistics, Level 2 Further Mathematics Certificate (NB - GCSE statistics and physics are not prerequisites).

What are the Qualification Requirements for this Course?

Grade 7 or above at GCSE mathematics

How is the Course Delivered?

This course usually has two teachers teaching the syllabus for 5 hours per week. We expect students to complete a minimum of 5 hours of independent learning that takes form through their multiple homeworks they receive each week. The use of the google classroom is essential to communicating to students ensuring their overall experience is a positive one. This can include sharing lesson slides, recordings, homework and feedback to students.

Subject Overview		
Half Term	**Year 12**	**Year 13**
Autumn 1	Focus on pure mathematics to include; ● Introduction to calculus. ● Topics in number theory. ● Coordinate geometry.	Focus on pure mathematics to include; ● Extended differentiation techniques learnt in year 1. ● Trigonometry to extend to harmonic form and trigonometric identities. Further integration techniques are also covered here.

Autumn 2	Focus on pure mathematics to include; ● Introduction to logarithms. ● Extended calculus to include areas under a curve. ● Extending learning on trigonometry beyond triangles.	During this half term students study more calculus but begin to extend upon mechanics from year 1 content. The topics to study include; ● Numerical methods for approximating integrals and solutions to equations. ● Solving first order differential equations. ● Kinematics in 2 dimensions. ● Resolving forces.
Spring 1	Statistics and mechanics are introduced during this term. In statistics you will study; ● Data representation and sampling methodology. In mechanics you will study; ● Kinematics in one dimension with constant acceleration.	More calculus is covered across this half term along with extended content on statistics from year 1; ● Conditional probability. ● The normal distribution.
Spring 2	In statistics you will study; ● Probability. ● Distribution theory. ● Statistical hypothesis testing. In mechanics you will study; ● Forces.	Most of the content for the course is complete at this point with topics; ● Further hypothesis testing ● Moments Left to be covered.

	• Newton's Laws of Motion.	
Summer 1	This half term will see you tidy up topics from the previous terms and extend into proof ready to do an internally assessed paper baked on learning so far.	This half term is committed to preparation time for externally assessed examinations.
Summer 2	Teaching of year 2 content commences, extending upon content learnt in Spring term 1.	

How is the Course Assessed?

The course is externally assessed through three 2 hour papers sat at the end of year 2. These papers cover all topics covered across the 2 year course. The mechanics and statistics elements are only assessed in papers 2 and 3.

Your progress will be monitored through controlled assessments completed in the classroom every half term along with mock examinations that take place after the Christmas break and Easter.

What is our Recommended Subject Reading list to Support your Study? -

There are some excellent resources to bridge the gap between GCSE and A level mathematics. One of the best is the Hegarty Maths website. If your school has a subscription you can access the transition tasks and videos provided there.

Failing that, one of the best resources I have seen is A Head Start to A level Mathematics by CGP.

A particularly good YouTube channel is ExamSolutions who provides many solutions to questions, tutorials on topics and live streams for students to work along with.