

**Academic Requirements**

The AS and A level Mathematics syllabuses have been designed to build upon the work studied for the Higher Tier at GCSE. The study of Mathematics in the sixth form will appeal to those students who enjoyed mathematics at GCSE; it will appeal particularly to those who enjoyed, and had a flair for, the more abstract topics of algebra and geometry. To succeed at AS or A level the student will need a sound understanding of all the topics studied for GCSE and she should have good algebraic skills. To be reasonably sure of success at AS or A level, the student should have obtained at least Grade B in Higher Tier GCSE: to obtain top grades at AS or A level, the student should have achieved Grade A\* or A at GCSE.

Students who really enjoy Mathematics, and would welcome the opportunity to study complex algebra and new abstract topics, should consider taking Further Mathematics (AS or A level). However, students should consider this option only if they obtained Grade A or A\* at GCSE.

**Course Specification**

<b>OCR Mathematics:</b>	<b>AS level 3890</b>	<b>A level 7890</b>
<b>OCR Further Mathematics:</b>	<b>AS level 3892</b>	<b>A level 7892</b>

The mathematics studied at AS and A level falls into two categories – Pure Mathematics and Applied Mathematics. Pure Mathematics is the study of abstract topics such as geometry, algebra, trigonometry, functions and calculus. Applied Mathematics relates the knowledge and skills learned in Pure Mathematics to real life situations in Mechanics and Statistics. Mechanics is the study of forces and moving objects; Statistics is the study of probability and the analysis of data.

There are 17 modules available in the mathematics syllabuses. Some modules are designated AS modules, and some are designated A2 modules. Different combinations of modules are possible but the numbers of modules examined for these qualifications are:

AS Mathematics	3 modules
A level Mathematics	6 modules
A level Mathematics and AS Further Mathematics	9 modules
A level Mathematics and A level Further Mathematics	12 modules

Students who take AS Mathematics have 7 lessons a week throughout the Lower Sixth and sit three examinations in June. Success in these three examinations leads to the award of AS Mathematics. For A level, students continue into the Upper Sixth and follow a programme of 8 lessons a week with one examination in January and two in June, leading to the award of A level Mathematics.

Students of Further Mathematics follow the programme described above. And, in addition, they have 7 lessons a week of Further Mathematics in the Lower Sixth and 8 lessons a week in the Upper Sixth. Three modules are studied in each year with examinations in June in the Lower Sixth and January and June in the Upper Sixth. Completion of 12 modules in total will lead to the award of A level Mathematics and A level Further Mathematics. It is possible to cease study of Further Mathematics at the

end of the Lower Sixth although the study of A level Mathematics must continue throughout the Upper Sixth so that 9 modules are completed; this leads to the award of A level Mathematics and AS Further Mathematics.

Each module is examined by a single written examination of 1 hour 30 minutes. There is no coursework.

Students who wish to study mathematical subjects at some universities, notably Cambridge and Warwick, may be required to sit extra examinations (STEP or AEA). We provide a programme of support and study for such students.

### **Why Mathematics?**

Students who have studied Mathematics will acquire skills and knowledge that can be applied in many fields. In addition to the acquisition of mathematical skills, students will develop their powers of reason and logic, and their communication skills. Because these skills are transferable, the worth of having studied Mathematics is universally recognised.

There are many career opportunities open to those who have studied A level Mathematics, in Science and Technology and also in Business, Finance and Management. A level Mathematics is a preferred qualification for entry to many degree courses.

Some students go on to study mathematics at university. There has been a shortage of Mathematics graduates for many years and they sought after by industry, commerce and the public sector. Because of the excellent training that Mathematics gives, graduates are always likely to be in demand.

### **A Student's Perspective**

'I feel that I really have made progress in Maths. Everything is much clearer than when I was doing GCSE.'

'In Maths you have to think clearly to get to the solution. This is a valuable skill.'

'Maths is fun, interesting, wonderful... The work is hard but you do not feel this when you know how to enjoy it.'

'Some of the Maths is really hard but you get a lot of satisfaction when you solve a difficult problem.'

'I really enjoyed Further Maths. It was fun studying all these things that most people have never heard of.'

'There is no denying that the Maths is much harder than at GCSE, but there is always someone at hand to help – either a fellow student or a member of staff. With constant practice and commitment the work gets easier.'

'Wow! Talk about hard work! But at the end of it all you feel so good about yourself. You really feel like you've achieved something. And you have!'