



### Overview:

The Advanced level in Further Mathematics course consists of three externally examined papers; two Further Pure Mathematics and one Applied Mathematics paper consisting of Further Mechanics and Discrete Mathematics. Each paper is 2hrs, 100 marks, equally weighted towards your final grade at A Level.

GCE A Level in Further Mathematics is a course worth studying not only as a supporting subject for the physical and social sciences, but in its own right. It is challenging and interesting. It builds on work already met at GCSE (higher tier) but also involves new ideas produced by some of the greatest minds of the last millennium.

### Studying Mathematics, the aims and objectives:

- understand mathematics and mathematical processes in a way that promotes confidence, fosters enjoyment, and provides a strong foundation for progress to further study;
- understand coherence and progression in mathematics and how different areas of mathematics are connected;
- apply mathematics in other fields of study and be aware of the relevance of mathematics to the world of work and to situations in society in general;
- use their mathematical knowledge to make logical and reasoned decisions in solving problems both within pure mathematics and in a variety of contexts, and communicate the mathematical rationale for these decisions clearly;
- construct mathematical proofs;
- use their mathematical skills and techniques to solve challenging problems which require them to decide on the solution strategy;
- represent situations mathematically and understand the relationship between problems in context and mathematical models that may be applied to solve them;
- interpret solutions and communicate their interpretation effectively in the context of the problem;
- read and comprehend mathematical arguments, including justifications of methods and formulae, and communicate their understanding;
- use technology such as calculators and computers effectively and recognise when such use may be inappropriate;
- take increasing responsibility for their own learning and the evaluation of their own mathematical development.

### Why Study Further Mathematics?

- **Students taking Further Mathematics overwhelmingly find it to be an enjoyable, rewarding, stimulating, and empowering experience.**  
It is a challenging qualification, which both extends and deepens your knowledge and understanding beyond the standard A Level Mathematics. Students who do it often say it is their favourite subject.
- **For someone who enjoys mathematics, it provides a challenge and a chance to explore new and/or more sophisticated mathematical concepts.**  
As well as new learning new areas of pure mathematics you will study further applications of mathematics in mechanics, statistics, and decision mathematics.
- **Students who take Further Mathematics find that the additional time spent studying mathematics boosts their marks in single A level Mathematics.**  
Studying Further Mathematics consolidates and reinforces your standard A level Mathematics work, helping you to achieve your best possible grades.
- **It makes the transition from sixth form to university courses which are mathematically rich that much easier as more of the first year course content will be familiar.**  
If you are planning to take a degree such as Engineering, Sciences, Computing, Finance/Economics, etc., or perhaps Mathematics itself, you will benefit enormously from taking Further Mathematics, at least to AS level. AS Further Mathematics introduces new topics such as matrices and complex numbers that are vital in many STEM degrees. Students who have studied Further Mathematics find the transition to such degrees far more straightforward.
- **It enables students to distinguish themselves as able mathematicians in their applications for university and future employment.**  
Further Mathematics qualifications are highly regarded and are warmly welcomed by universities. Students who take Further Mathematics are really demonstrating a strong commitment to their studies, as well as learning mathematics that is very useful for any mathematically rich degree. Some prestigious university courses require you to have a Further Mathematics



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## Further Mathematics

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qualification and others may adjust their grade requirements more favourably to students with Further Mathematics. If you are not planning to study for mathematically rich degrees but are keen on mathematics you will find Further Mathematics a very enjoyable course and having a Further Mathematics qualification identifies you as having excellent analytical skills, whatever area you are considering for a career.

### **Expectations:**

A willingness to work hard throughout the course important. We will expect to have seen a good attitude at GCSE. The ability to work accurately with algebra, trigonometry, geometry and proof is essential and a good understanding of probability and statistics will help, although key concepts will be revised at the start of the course.

For every hour taught in lessons, students are expected to spend at least two hours independent/private study.

### **Career Pathways:**

A Level in Further Mathematics is highly regarded by employers and top universities as evidence of the ability to think logically, analytically and precisely. It is a much sought after qualification for entry to a wide variety of full-time courses in higher education. There are also many areas of employment that see Mathematics as an important qualification and it is often a requirement for the vocational qualifications related to these areas. Higher education courses or careers that require A Level Further Mathematics or are strongly related include; Engineering, Economics, Architecture, Medicine, Accountancy, Lecturer, Teaching, Physics, Computing and Information and Communication Technology.