# A Level Further Mathematics

## What is Further Mathematics?

Further Maths is an A Level which broadens and deepens the maths covered in A Level Maths. It develops your mathematical ability and introduces you to new topics, such as matrices and complex numbers, which are desirable for maths-rich degrees in areas such as sciences, engineering, statistics and computing, as well as mathematics itself. Further Maths is studied alongside A level Maths. It may be possible to study A level Further Maths in year 13, alongside A Level Maths.

## Why study Further Mathematics?

Further Maths will introduce you to fascinating mathematical concepts. It will further develop your problem solving skills, which will help to boost your performance in A Level Maths. If you plan to apply for any degree that is rich in maths, a qualification in Further Maths will give your application an edge. You will study more maths that is relevant to your university course, which will help you to hit the ground running. Some prestigious university degree courses now require a Further Maths qualification, and many university courses prefer students who have studied Further Maths to at least AS Level.

## What makes a successful Further Mathematics student?

A good Further Maths student usually demonstrates a number of characteristics. A good level of mathematical ability is a must but also a willingness to have a go at something that may seem daunting at first is also the key. With perseverance most problems can be solved and this sort of academic resilience will be the key to success in this subject.

## To study this course, what qualifications will I need and in which subjects?

You should have done well at GCSE Mathematics; a grade 6 is expected. You will study A Level Maths alongside this course so you must have a real enthusiasm for the subject and be looking to broaden your knowledge of Mathematics.

## What is the structure of the course?

| Topics | |
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| **Pure Maths Topics**<br>Complex numbers, Matrices, Further algebra and functions, Further calculus, Further vectors, Polar coordinates, Hyperbolic functions. Series and Induction, Differential equations.<br><br>**Optional Paper Topics**<br><br>**Option 1 - Mechanics**<br>Dimensional analysis, Momentum and collisions, Work, energy and power, Circular motion, Hooke's law, Modelling oscillations, Centre of mass, Oblique impact.<br><br>**Option 2 - Statistics**<br>Discrete random variables, Poisson distribution, Type I and II errors and power of a test, Continuous random variables, Normal distribution, Hypothesis testing, Confidence intervals, Simulation. | **Paper 1 - Pure Mathematics (50%)**<br>2 hours 40 minutes written exam comprising short method based and longer applied questions based on the content from the pure mathematics topics only.<br><br>**Paper 2 - Optional Major Paper (33.3%)**<br>2 hours 15 minutes written exam comprising method and application based questions on the content from either statistics or mechanics.<br><br>**Paper 3 – Optional Minor Paper (16.7%)**<br>1 hour 15 minutes written paper comprising method and application based questions on the content from the remaining units not selected for the major option. |

## What opportunities are there for me to study beyond the classroom?

We provide our students with the opportunity to enhance their learning through the use of web-based materials.

## What kind of career does this subject/qualification prepare me for?

Finance and banking, natural and life sciences, engineering, business consultancy, actuarial, computing, medicine and health. Higher level problem solving skills are well recognised by all employers and educational institutions.