

A LEVEL FURTHER MATHEMATICS



WHAT IS FURTHER MATHEMATICS?

Further Mathematics is an additional A-level in Mathematics. You will enhance the skills acquired in A-level Mathematics and demonstrate that you can apply your A-level Mathematics knowledge to a wider range of contexts and unfamiliar scenarios.

If you are interested in studying Further Mathematics, please pick up an A-level Mathematics leaflet too.

WHY SHOULD I STUDY FURTHER MATHEMATICS?

If you have a passion for mathematics and are a keen problem solver then this may be the course for you. It is useful if you are wishing to pursue a mathematics rich course at degree level (even if the course requirements do not ask for Further Mathematics). For example, this course will be beneficial for degree programmes such as Mathematics, Statistics, Chemistry, Biology, Physics, Engineering and Computer Science. In addition, A-level Further Mathematics is classed as a facilitating subject by Russell Group Universities. This means that the skills you develop in Further Mathematics are highly valued by universities and studying this course would help your application stand out. Some further examples of courses that list A-level Further Mathematics as a desired course are Biochemistry, Biomedical Sciences, Law, Medicine, Dentistry, Optometry and Veterinary Science (mathscareers.org.uk).

Furthermore, you will learn about Decision Mathematics - an area of mathematics you will not have studied before. Decision Mathematics is useful if you are considering careers in Computer Science, Urban Development, Quantity Surveying, Project Management and Route Planning.

COURSE STRUCTURE & CONTENT

In the first year of the course, you will learn all the A-level Mathematics content (see the A-level Mathematics handout for details). In the second year of the course, you will learn all the Further Mathematics content.

The course content will be divided up as follows:

- **Pure Mathematics (1/2 of the course):** Mathematical proof, complex numbers, matrices, further algebra and functions, further calculus, further three-dimensional vectors, polar coordinates, hyperbolic functions and further differential equations.
- **Further Statistics (1/4 of the course):** Further probability distributions, further hypothesis testing, central limit theorem, chi-squared tests, probability generating functions and quality of tests.
- **Decision Mathematics (1/4 of the course):** Linear programming, graph theory, algorithms (e.g. sorting and shortest route), critical path analysis.

HOW WILL I BE ASSESSED?

Further Mathematics will be examined by four written examinations sat at the end of the course. Each examination is 1 hour and 30 minutes in length, out of 75 marks and use of a calculator is permitted. All examinations have a formula book provided.

Papers 1 and 2 are based upon topics studied in Pure Mathematics only. These papers may include content from A-level Mathematics too.

Paper 3 is based upon topics studied in Further Statistics 1.

Paper 4 is based upon topics studied in Decision Mathematics 1.

Alongside these examinations, you will also sit your three A-level Mathematics papers.

In the first year of the course, you will sit three formative examinations (mock examinations) on the A-level Mathematics content only. In the second year of the course, you will complete three further formative examinations on both A-level Mathematics and A-level Further Mathematics content.

COURSE COMMITMENT

The course has 9 hours of lesson time per week which is two blocks of the college timetable. If you choose to study A-level Further Mathematics, you will study this course alongside two other subjects.

As in A-level Mathematics, you will be expected to complete regular homework tasks set by your teacher to consolidate your understanding of current topics and revisit previously learnt content. The set homework tasks will take a minimum of 4.5 hours per week.

COURSE COSTS

For all the courses a Casio fx-991EX scientific calculator is required (which will be available to purchase from the College Resource Centre). Graphical calculators are often used by Further Mathematics students to support their learning but they are not essential for the course.

ENTRANCE REQUIREMENTS

To study A-level Further Mathematics, you will need:

- A minimum of a Grade 7 in GCSE Mathematics,
- To meet the college standard entry requirements of five GCSE passes (Grades 4 - 9).

PROGRESSION ROUTES

Students who have previously studied A-level Further Mathematics with us have progressed onto various university programmes after they have completed the course. Common university programmes undertaken are Engineering, Mathematics, Physics, Natural Sciences, Economics, Business Studies and Biology.

FURTHER INFORMATION

The full course specification can be found at:

<https://qualifications.pearson.com/content/dam/pdf/A%20Level/Mathematics/2017/specification-and-sample-assesment/a-level-l3-mathematics-specification-issue4.pdf>

Should you require further information please contact the Maths Team.

*Please note that the information in this leaflet is correct at the time of publication, but circumstances may arise which cause us to revise our provision.
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