General Information

The A level Further Mathematics course counts as two subjects and is suitable for students who possess a deep interest and love of mathematics and who have demonstrated a high ability in the subject. It leads to two A levels: an A level in Mathematics and an A level in Further Mathematics.

The course is designed to allow students to develop a wide variety of skills including how to use and apply a wide range of algebraic techniques, how to reason, interpret and communicate mathematically and be able to handle problem solving and mathematical modelling.

Course content

The Further Maths A level course covers a wide range of topics from both pure mathematics and applied mathematics.

Pure maths topics include calculus, trigonometry, algebra and functions, proof, vectors, and numerical methods. These topics are studied to a higher level than in the A level Mathematics course. Further pure topics such as complex numbers, hyperbolic functions, polar coordinates, matrices and differential equations are also studied in Further Maths.

Further Maths students will also study some applied mathematics topics chosen from mechanics, statistics and discrete maths. Mechanics topics include kinematics, Newton's laws of motion, momentum and impulse, moments and centres of mass, circular motion and work, energy and power. Statistics topic involve developing a deeper understanding of data analysis, probability, hypothesis testing and sampling. Students will be expected to use technology such as spreadsheets and scientific calculators to analyse large real-life data sets. Discrete mathematics involves the study and application of algorithms including network algorithms, critical path analysis, linear programming and game theory.
Entry requirements

Students choosing Further Mathematics should have a grade 7 in Maths GCSE and an average GCSE score of 6.0 (equivalent to a B). Students also need to have excellent algebra skills as algebra forms the basis of the course.

Students should also meet the general college entry requirements for Advanced Level study. Please refer to the current prospectus – advanced programmes, entry requirements.

In this subject, particular skills and aptitudes will be required, many of which will be demonstrated by students’ GCSE profiles.

Entry requirements might be changed in light of curriculum reform.

How it is taught

Most lessons involve an introduction to new mathematical skills, investigating concepts, working through example solutions, practising techniques as well as a range of other activities including paired and group tasks. Students are expected to practise skills learned in class outside of lessons and homework tasks are set on a regular basis. A wide variety of resources are available to help students work independently in their own time including video tutorials, worksheets, practical activities, past papers, revision booklets and workbooks.

Examination details

The course is linear and the topics are studied over two years with assessment taking place at the end of two years. Assessment is through a number of written examinations.

Useful / common subject combinations

Many students choosing Further Mathematics typically study it alongside other subjects such as Chemistry, Physics, Computing, Psychology, Biology, Geography, Economics and Business Studies but each year there are students on the course from almost all of the other subject areas.
**Careers / HE information**

Further Mathematics is an ideal choice for students who wish to follow a course in higher education involving a large amount of Mathematics as students who have studied Further Mathematics find the transition to university far more straightforward.

A growing number of competitive university courses in mathematics and engineering specify Further Mathematics as an entry requirement. For some degree courses, students who have taken Further Mathematics may be made a reduced A level offer compared to those students who are just taking Mathematics.

Each year, a number of Further Mathematicians go on to study mathematics, engineering, physics and other scientific subjects at university. Almost all of our A level students gain University places or full time employment at the end of their course at QE.

**Other relevant information**

Students who are considering studying Further Mathematics should try to ensure they choose this option on Bridging Week.