



Further Mathematics (A Level)

Course objectives

Further Mathematics both extends and deepens student's knowledge and understanding beyond the standard A level Mathematics course. It provides a challenge and a chance to explore new or more sophisticated mathematical concepts. Further Mathematics can make the transition to higher education courses which are mathematically rich, that much easier.

Main qualifications

A Level

Awarding Body

Edexcel

Duration/ Lessons per week

10 x 1 hour lessons over a two week timetable

Entry requirements

Students will need at least a grade 8 on the Higher Tier in GCSE Mathematics

Progression opportunities

For progression to many courses at A level and University it is important to have strong mathematical skills. For most science, technology engineering and mathematics (STEM) degree courses, A Level Mathematics is a mandatory requirement and A Level Further Mathematics is either mandatory or at least strongly recommended.

Course content

The course builds on the skills, knowledge and understanding from the GCSE curriculum and draws together different areas of knowledge, skills and understanding from the full course of AS Further Mathematics and the A Level Mathematics qualification. Problem solving, proof and mathematically modelling are the overarching themes of the course.

Topics covered in Core Pure Mathematics over the two years include:

- Proof by Induction
- Complex Numbers
- Matrices
- Further Algebra and Functions
- Further Calculus
- 3D Vectors
- Polar Coordinates
- Hyperbolic Functions
- Differential Equations



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Course content

Topics covered in Further Statistics 1 over the two years include:

- Discrete Random Variables
- Poisson and Binomial distributions
- Geometric and Negative Binomial distributions
- Hypothesis testing
- Central Limit Theorem
- Chi-squared tests
- Probability generating functions
- Quality of Statistical Tests

Topics covered in Decision 1 over the two years include:

- Algorithms and Graph Theory
- Algorithms on graphs
- Critical Path Analysis
- Linear Programming

Costs

Students will need a Casio Classwiz fx-991EX or equivalent.
Students may wish to purchase a Casio CG50 instead.

These will be able to be purchased from the school at the beginning of Year 12.

Assessment

Any of the Core Pure content can be examined in either Paper 1 or Paper 2

Students sit 4 externally-examined papers.

Paper 1: Core Pure Mathematics
25% of the qualification
1 Hour 30 minutes

Paper 2; Core Pure Mathematics
25% of the qualification
1 hour 30 minutes

Paper 3: Further Statistics 1
25% of the qualification
1 hour 30 minutes

Paper 4: Decision Mathematics 1
25% of the qualification
1 hour 30 minutes

Staff contact

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