A Level Further Maths

What are the entry requirements?
Normal entry requirements with GCSE Mathematics at Grade 7 or above.
A good understanding of all GCSE Algebra topics is expected.

What does the course involve?
Students can only choose Further Mathematics **in addition to** the single Mathematics A-Level, although it is assessed separately as an A-Level in its own right.

In Further Maths, the course will consist of 50% Further Pure Mathematics, which is mandatory content, and two additional units worth 25% each. We currently offer Statistics and Decision Mathematics as the two additional units, although this is subject to change at the school's discretion.

Further Pure Mathematics
Students develop an understanding of the rigour and technical accuracy needed for more advanced study of mathematics, and look at advanced areas such as matrices, complex numbers and differential equations.

Topics:
Proof
Matrices
Complex Numbers
Polynomial Roots and Maclaurin Series
Further Calculus
Volumes of Revolution
Vectors
 in 3D
Polar Coordinates
Hyperbolic Functions
Differential Equations

Further Statistics
Students develop a wider range of statistical tools and models which can be applied to practical scenarios, and develop the ability to select and evaluate appropriate hypothesis tests.

Topics:
- Discrete Probability Distributions
- Poisson and Binomial Distributions
- Geometric and Negative Binomial Distributions
- Hypothesis Testing
- Central Limit Theorem
- Chi Squared Tests
- Probability Generating Functions

Decision Mathematics
Students gain experience of modelling and of the use of algorithms in a variety of situations.

Topics:
- Algorithms
- Graph Theory
- Minimum Connectors and Shortest Paths
- Critical Path Analysis
- Linear Programming

Progression
Further Mathematics is ideal for students who are planning to go on and do a degree in Mathematics at University. Content in the Further Mathematics course also comes up in degrees in Physics and Engineering, so it can also give you a head-start in these disciplines. It can also be a preferred A-level in almost any BSc subject, including Chemistry, Biology, Geography, Sociology and Psychology.

Where can I find out more?
Talk to your Mathematics teacher or Mr Ludlam about what A-Level Further Mathematics entails to get more details and to find out if it will be suitable for you.