

# Further Mathematics

## A Level

Edexcel Advanced Subsidiary (AS) | Advanced Level (A2)  
Head of Mathematics Department – Sue Reeves

You should do this course if.....

You want to extend your knowledge of mathematics beyond that covered in the single A level. This a challenging and very rewarding course for the dedicated student of mathematics.

You will take this A level in addition to A level Mathematics.

Skills you will develop on this course

The construction of rigorous mathematical arguments and proofs.

The selection and use of appropriate mathematical models to represent situations in the real world.

The ability to deal with substantial problems presented in an unstructured form.

The use of calculators, formulae books and statistical tables.

Examination skills

Topics studied

### UNIT S1

Statistics: Representation and Summary of data, probability, correlation and regression, discrete random variables and the Normal distribution.

### UNIT M2

Mechanics: Projectiles, variable acceleration, centres of mass, work and energy, collisions and statics of a rigid body.

### UNIT S2

Statistics: Binomial and Poisson distributions, continuous random variables, continuous distributions and hypothesis tests.

### UNIT FP1 – (AS)

Pure Mathematics: Complex numbers, numerical solutions of equations, coordinate systems, matrix algebra, series, proof by induction.

### UNIT FP2 – (A2)

Pure Mathematics: Inequalities, series, further complex numbers, first order differential equations, second order differential equations, polar coordinates.

### UNIT D2

Decision Mathematics: Transportation problems, allocation problems, the travelling salesman, game theory, linear and dynamic programming, flows in networks.

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### How will you learn?

You can expect to work on your own and as part of a group. Topics will be taught using a variety of theoretical and practical approaches.

You will use textbooks, power points, graphical software and internet sites to learn about new concepts and methods.

You will progress from simple problems to more complex A level questions.

You will be encouraged to extend your mathematical knowledge by attending lectures given by working mathematicians and taking part in the UK Senior Maths challenge and the Surrey Schools Maths Challenge.

### Where does the course lead?

This course is particularly useful for students who intend to study Mathematics, Physics and Engineering at degree level.

Students often move on to study Mathematics, Science or Economics at leading universities i.e. Oxford and Cambridge. Extra tuition is available to prepare for the STEP and AEA exams required for such courses.

### Assessment and Exams

Each unit is assessed by a 90 minute written paper. Each paper contains questions of varying length and complexity. Students are required to answer all the questions.

There is no coursework.

Unit FP1 together with any 2 other units lead to an AS qualification.

Unit FP1 and FP2 together with 4 other units lead to an A level qualification.

### Entry Requirements

5C's at GCSE including a grade A\* or A in Mathematics.

You should also enjoy the challenge of solving complex problems.