

Mathematics with Mechanics A Level

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

You should do this course if.....

You enjoy mathematics and want to extend your range of mathematical skills and techniques and use them to model real world problems.

The course combines well with a variety of other A levels, particularly Physics and Design Technology.

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, and formulae books.
Examination skills

Topics studied

UNIT M1 – (AS)

Mechanics: Vectors, Newton's laws of motion, equilibrium, friction, moments.

UNIT C1 – (AS)

Pure Mathematics: Algebra and functions, the equation of a straight line, arithmetic series, calculus (differentiation and integration).

UNIT C2 – (AS)

Pure Mathematics: Algebraic division, the equation of a circle, Geometric and Binomial series, trigonometry, exponentials and logarithms, calculus.

UNIT C3 – (A2)

Pure Mathematics: Numerical methods, algebraic fractions, trigonometric identities and further work on exponentials, logarithms and calculus.

UNIT C4 – (A2)

Pure Mathematics: Partial fractions, parametric equations, vectors and further work on calculus and series.

UNIT D1 – (A2)

Decision Mathematics: Algorithms, route inspection, critical path analysis, linear programming and matchings.

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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 for degrees in Mathematics, Physics, Engineering and Architecture

Mathematics is also in great demand by employers. Some careers make obvious use of the mathematical skills learned in areas such as accountancy, banks and financial services. Alternatively, the ability to analyse and solve problems gives opportunities in local government, the Civil Service and all areas of industry and commerce.

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. Students are allowed to use a calculator on all papers except unit C1.

There is no coursework.

Unit M1, C1 and C2 lead to an AS qualification at the end of the first year.

Entry Requirements

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