

Mathematics

Advanced Higher

Why take this course?

The Mathematics course at Advanced Higher provides an excellent opportunity for students to improve their Mathematical skills before embarking on a University Course or career, particularly in Mathematics, Engineering, Science, Computing or Technology based subjects. Mathematics Advanced Higher is essential for any student contemplating entering the second year of most of these disciplines. It will also prove useful for students of biological and social sciences, medicine, accounting, business studies and management.

To succeed in this course, you need...

Your knowledge and understanding should be secure at Higher Mathematics level. You will be expected to do a significant amount of practice and consolidation of taught topics out with lesson time and you will need resilience to persevere with the problem solving and rigorous proofs in the course.

Course Structure and Content

Methods in Algebra and Calculus (Advanced Higher)

The general aim of the Unit is to develop advanced knowledge and skills in algebra and calculus that can be used in practical and abstract situations to manage information in mathematical form. The Outcomes cover partial fractions, standard procedures for both differential calculus and integral calculus, as well as methods for solving both first order and second order differential equations. The importance of logical thinking and proof is emphasised throughout.

Applications of Algebra and Calculus (Advanced Higher)

The general aim of the Unit is to develop advanced knowledge and skills that involve the application of algebra and calculus to real life and mathematical situations, including applications to geometry. Learners will acquire skills in interpreting and analysing problem situations where these skills can be used. The Outcomes cover the binomial theorem, the algebra of complex numbers, properties of functions, and rates of change. Aspects of sequences and series are introduced, including summations, proved by induction.

Geometry, Proof and Systems of Equations (Advanced Higher)

The general aim of the Unit is to develop advanced knowledge and skills that involve geometry, number and algebra, and to examine the close relationship between them. Learners will develop skills in logical thinking. The Outcomes cover matrices, vectors, solving systems of equations, the geometry of complex numbers, as well as processes of rigorous proof.

Course Assessment

You will be assessed throughout the year. Each assessment will be accumulative and will gauge how you are coping with exam level questions. If you pass these convincingly this would give an indication that you will be able to attempt the exam. The final award depends entirely on the result obtained in the SQA exam.

Essentials

You need a scientific calculator.

Where might this course take me?

As stated above Advanced Higher Mathematics is preferable as part of the entry qualifications for further study in Mathematics, Engineering, Science, Computing or Technology based subjects and essential for any student contemplating entering the second year of most of these disciplines.