

# A Level Further Maths at The Warriner School



## Further Mathematics A Level

**Exam board: OCR – MEI Specification**

**Entry requirements: GCSE Mathematics at Grade 8\* or above.** (Students choosing Further Mathematics must also choose A level Mathematics.)

\*Students achieving a Grade 7 may be admitted at the discretion of the Maths Department.

**Assessment structure:** Formal exams taken at the end of Year 13.

This consists of four papers: one for pure maths content and one for each applied maths unit covered.

Paper 1:	Core Pure (2 hours 40 minutes)
Paper 2:	Modelling With Algorithms (1 hour 15 minutes)
Paper 3:	Numerical Methods (1 hour 15 minutes)
Paper 4:	Mechanics A (1 hour 15 minutes)

There will be a significant emphasis on problem solving, reasoning, and modelling and a requirement for the use of technology to permeate teaching and learning.

Core Pure offers students the opportunity to study fields of mathematics that are beyond the scope of the standard Mathematics A-level. This includes Complex Numbers (a number system developed from allowing the square root of negative numbers to be defined, also known as 'imaginary' numbers), Matrices (a multidimensional approach to algebra which allows for systems of equations to be handled simultaneously), Vectors methods and Calculus techniques.

Modelling With Algorithms has links with Computer Science and multiple applications in industry. This unit explores algorithms in their own right, as well as optimisation and network problems. Students will apply techniques learned at GCSE, and consider how real world problems can be modelled by algorithms .

Numerical Methods explores the approach to problems for which no exact algebraic methods exist. Students will learn how to use a spreadsheet to implement the methods and learn to analyse the errors associated with numerical methods.

Mechanics A goes beyond the mechanics learned in the standard A-level, covering basic principles of forces and their moments, work and energy, impulse and momentum and centres of mass. Student will use these principles to model various situations, including rigid bodies in equilibrium, particles moving under gravity or on a surface, and bodies colliding with direct impact.

**Skills required:** The skills required for Further Mathematics are the same as those for Mathematics. In addition, Further Mathematicians will have a passion for, and want to gain a deeper understanding of, mathematical concepts, and perhaps to go on to study Mathematics at a top university.

**Future study avenues or careers:** Although only a small number of degrees list Further Maths as essential (because not all schools and colleges are able to offer it as an A-level), there are many which consider it a useful facilitating subject. These include:

Actuarial Science	Aeronautical Engineering	Biochemistry	Biomedical Sciences	Chemical Engineering	Chemistry
Civil Engineering	Computer Science	Dentistry	Electronic Engineering	Law	Materials Science
Mathematics	Mechanical Engineering	Medicine	Optometry	Physics	Veterinary Science