



## FURTHER MATHEMATICS

### Course Information

Any student wishing to take Further Mathematics would also have to take Mathematics as another option. Students thinking about studying a degree at university with a significant mathematical content are advised to consider this course. As well as developing an even greater range of skills across Pure and Applied Mathematics, it also allows students to gain a greater depth of understanding and versatility with the content of the main Mathematics A level.

The Further Mathematics A Level reflects the style of the new GCSE course giving more emphasis to understanding, mathematical modelling and problem-solving skills. The course has a specified Pure component and two additional Applied modules. There is some flexibility in the Applied modules as these are chosen from modules on Statistics, Mechanics, Decision and Further Pure. We aim to tailor the Further Mathematics course to the future needs of the students **wherever possible**, for example future engineers cover more Mechanics, and future scientists cover more Statistics.

More specifically, Pure Mathematics is the foundation of methods and concepts, and will cover proof, complex numbers, matrices, functions, calculus, vectors, polar coordinates, hyperbolic functions, differential equations, trigonometry, numerical methods and coordinate geometry.

Mechanics is the study of Forces and movement, and will cover dimensional analysis, momentum and collisions, work, energy and power, circular motion, and centres of mass and moments.

Statistics is the study of probability and data handling, and will cover discrete random variables and expectation, the Poisson distribution, type I and II errors, continuous random variables, chi squared testing, exponential distributions and inference.

Decision is the study of the Mathematics behind making choices, and will cover algorithms, networks, “best” solutions, Critical path analysis, linear programming, transportation problems and game theory.

Further Pure covers more components that are not in the core content, and will cover conic sections, more methods in calculus, number theory, group theory and more complex number work.

Students will be sitting the Edexcel course ‘Advanced GCE in Further Mathematics 9FM0’.

The examinations consists of four, 1½ hour long papers, each worth 75 marks, and each contributing 25% of the final A level grade. The questions on all papers are a mix of question styles from short questions to multistep problems. All examinations are taken at the end of Year 13.

Paper 1 will cover skills from the Pure Mathematics content.

Paper 2 will cover skills from the Pure Mathematics content.

Paper 3 will cover the skills from Optional module 1

Paper 4 will cover the skills from Optional module 2

### Entry Requirements

In order for a student to gain success in this course, they would need to be a confident mathematician, usually having gained at least an 8 in their GCSE Mathematics. With this in mind, the entry requirement is 8, or a very high 7 from a predicted 8.

### Career Pathway

Mathematics underpins the study of any science, technology, engineering or mathematics subject within higher education. Degree courses in Automotive Engineering, Chemical Engineering, Economics, Marine Engineering, Mathematics, Mechanical Engineering and Physics.

Should you like to receive any additional information on this course, please contact Mrs Jen Wells – Head of Department