RMGS
MATHEMATICS A LEVEL, FURTHER MATHEMATICS AS LEVEL AND A LEVEL AND CORE MATHS LEVEL THREE CERTIFICATE

(OCR MEI)

What are the aims of the course?

Students will be encouraged to develop their understanding of mathematics and mathematical processes in a way that promotes confidence and fosters enjoyment.

To develop ability to reason logically and recognise incorrect reasoning, to generalize and to construct mathematical proofs

To extend their range of mathematical skills and techniques and use them in more difficult, unstructured problems

What does it involve?

Pure Mathematics This extends GCSE work in algebra, coordinates and trigonometry whilst introducing new ideas and techniques, such as calculus, in abstract mathematical theory and the ideas of proof.

Mechanics This is a mathematical model in which systems of forces are analysed and the motion of bodies is considered by developing ideas such as acceleration, energy and momentum, which may have been met in Physics.

Statistics This develops the ideas of probability and statistics met in GCSE mathematics, progressing to the modelling of real-life situations with probability and the analysis of real-life data in statistics.

For A level Mathematics two thirds of the work will be Pure Mathematics. The other third will be part Mechanics and part Statistics. For the statistic parts of A level Mathematics there will be pre-release material of a 'Large Data Set' used during the year.

For A level Further Mathematics, the work will be equally divided between Further Pure Mathematics, Mechanics and Statistics in year 12. In year 13 half of the work will be Further Pure Mathematics and a third Mechanics and a sixth Statistics.

Further Mathematics is an extra A level. Students studying Further Mathematics must also study Mathematics so they will have two qualifications in Mathematics. Further Mathematics is a harder subject than Mathematics, but this is recognised by universities as a harder qualification. Further Mathematics must be taken as a fourth subject and unlike other subjects there will be AS exams taken at the end of year 12. Students can then choose to continue A level Further Mathematics in year 13 if they achieve a good AS grade at the end of year 12

Core Mathematics is a level three qualification (AS level equivalent).
All exams are taken at the end of year 12, so students will have a grade and not just a predicted grade for their UCAS application. Topics covered include; Financial Problem solving (looking at tax, insurance, AER and APR and investments). Statistics (including the normal distribution, correlation coefficients and hypotheses testing); Estimating and risk (including Fermi estimations and risk assessments linking to investment)

How is it assessed?

<u>Mathematics A Level – Year 13</u> Three 2 hour exams, one in Pure Mathematics one in Pure Mathematics and Mechanics and one in Pure Mathematics and Statistics.

<u>Further Mathematics AS Level – Year 12</u> Three 1.15 hour exams in Further Pure Mathematics, Further Mechanics and Further Statistics

<u>Further Mathematics A Level – Year 13</u> One 2.40 hour exam in Further Pure Mathematics and either one 2.15 hour exam in Mechanics and one 1.15 hour exam in Statistics.

<u>Core Mathematics – Year 12</u> Two 2 hour exams. Paper 1 'Introduction to Quantitative Reasoning'. Paper 2 'Statistical Problem Solving'

Are there any specific entry requirements?

Students who wish to take Mathematics in the sixth form should have achieved at least a grade 7 in their GCSE Mathematics exam.

Students who wish to take Further Mathematics in the sixth form should have achieved at least a grade 8 in their GCSE Mathematics exam.

Students who wish to take Core Mathematics in the sixth form should have achieved at least a grade 5 in their GCSE Mathematics exam.

Why is it a useful qualification?

Mathematics is enjoyable and worth studying in its own right as well as being a supporting subject for the physical and social sciences. There is evidence to suggest that students who apply to University to study subjects such as Economics are given more favourable offers if they are studying A level Mathematics. In addition, research carried out at the LSE has found that there is a high wage premium (up to +11%) associated with having studied Mathematics at A level. An essential part of mathematics study is the challenge of analysing and solving a problem and the satisfaction and confidence gained from achieving a 'correct' answer.

Other areas for which A level mathematics is important include medicine, architecture, banking, stock market, accountancy, insurance, computing and ICT.

For Further Mathematics, students will have an AS grade and not just a predicted grade for their UCAS application.

Core Mathematics has a strong focus on problem solving. It links very well with Business Studies and Economics as many aspects of finance are included in the course. Much of the statistics in Core Mathematics also links well with Psychology, Geography and Biology