KS5 Long Term Curriculum Plan: **Mathematics - Year 13 2025-2026**

Curriculum Aim: The aims and objectives of this qualification are to enable students to:
- understand mathematics and mathematical processes in a way that promotes confidence, fosters enjoyment and provides a strong foundation for progress to further study
- extend their range of mathematical skills and techniques
- understand coherence and progression in mathematics and how different areas of mathematics are connected
- apply mathematics in other fields of study and be aware of the relevance of mathematics to the world of work and to situations in society in general

Link to prior learning: The subject builds on key skills learnt in Year 1 A level Maths. Students must apply prior learning in order to learn the new content.

Rationale of sequencing: We follow the Edexcel A Level Syllabus which consistently requires knowledge of previous topics in order to advance through the course. Students start with the pure/algebra topics that follow on from GCSE specification before becoming more advanced. Students then move on to the applied modules of statistics and mechanics. The sequencing is designed in a way that allows students to learn new skills and be tested on them, which will then be required to progress to the next topic. These skills are then applied to statistical and physical models and the end of the course when students move on to the statistics and mechanics books.

	Focus / Topic	Knowledge & Skills (from NC/Programmes of Study)	Assessment
Autumn 1	Sequences and Series, Binomial expansion, Radians, Trigonometric Functions, Trigonometry and modelling,	Pupils will: ● Understand and use sigma notation for sums of series. ● Understand and work with arithmetic sequences and series, including the formulae for nth term and the sum to n terms ● Work with radian measure, including use for arc length and area of sector. ● Understand and use the definitions of secant, cosecant and cotangent and of arcsin, arccos and arctan; their relationships to sine, cosine and tangent; understanding of their graphs; their ranges and domains. ● Understand and use double angle formulae. ● Construct proofs involving trigonometric functions and identities.	Assessment on year 1 Pure content
Autumn 2	Parametric equations, Differentiation, Numerical methods, Integration, Vectors	Pupils will: ● Understand and use the parametric equations of curves and conversion between Cartesian and parametric forms. ● Differentiate using the product rule, the quotient rule and the chain rule, including problems involving connected rates of change and inverse functions. ● Solve equations using the Newton-Raphson method and other recurrence relations of the form ● Integrate using partial fractions that are linear in the denominator. ● Carry out simple cases of integration by substitution and integration by parts ● Use vectors in two dimensions and in three dimensions	Year 13 Mock Examinations based on A Level exam structure

Spring 1	Regression and Correlation, Conditional probability, Moments, Forces and Friction	Pupils will: ● Understand and use moments in simple static contexts. ● Understand and use the F ≤ μR model for friction ● Understand and use conditional probability, including the use of tree diagrams, Venn diagrams, two-way tables.	Assessment on applied chapters learnt during the half term
Spring 2	Normal Distribution, Projectiles, Application of forces, Further Kinematics	Pupils will: ● Select an appropriate probability distribution for a context, with appropriate reasoning, including recognising when the binomial or Normal model may not be appropriate. ● Understand and use the Normal distribution as a model; find probabilities using the Normal distribution ● Model motion under gravity in a vertical plane using vectors; projectiles. ● Understand and use Newton's third law; equilibrium of forces on a particle and motion in a straight line (restricted to forces in two perpendicular directions or simple cases of forces given as 2-D vectors); application to problems involving smooth pulleys and connected particles;	Year 13 Mock Examination based on A Level applied exam
Summer 1	Revision for final exams	Pupils will: ● Revise all topics in preparation for the final exams	Final exams

Further Information

Exam board – Edexcel – the specification can be found here: https://qualifications.pearson.com/content/dam/pdf/A%20Level/Mathematics/2017/specification-and-sample-assesment/a-level-l3-mathematics-specification.pdf All students require a Casio Classwiz calculator for this course: https://www.amazon.co.uk/Casio-FX-991EX-S-UH-Scientific-Calculator-Resolution/dp/B0719FWP3X/ref=sr_1_1?keywords=casio+classwiz+calculator&qid=1562138320&s=gateway&sr=8-1

We use the Edexcel textbooks for this course:

https://www.pearsonschoolsandfecolleges.co.uk/secondary/Mathematics/16plus/EdexcelASandAlevelMathematics2017/EdexcelASandAlevelMathematics2017.aspx