Maths Department A Level Maths & Further Maths Programme of Study

Assessment objectives taught through all units:
AO1: Use and apply standard techniques
AO2: Reason, interpret and communicate mathematically
AO3: Solve problems within mathematics and other contexts

	Year 12 Maths	Year 12 Further Maths	Year 13 Maths	Year 13 Further Maths
Phase 1	**Units:** 1 Algebraic manipulation of surds and indices 2 Quadratic equations and their graphs 3 Simultaneous equations, linear and quadratic inequalities 4 Graphs and transformations 5 Coordinate geometry of straight-line graphs 6 Coordinate geometry of circles 7 Algebraic methods including the factor theorem, algebraic division of polynomials and proof 8 Binomial expansion	**Units:** 1 Algebraic manipulation of surds and indices 2 Quadratic equations and their graphs 3 Simultaneous equations, linear and quadratic inequalities 4 Graphs and transformations 5 Coordinate geometry of straight line graphs 6 Coordinate geometry of circles 7 Algebraic methods including the factor theorem, algebraic division of polynomials and proof 8 Binomial expansion 9 Trigonometric ratios, identities and equations 10 Differentiation of polynomials 11 Integration of polynomials 12 Exponentials and logarithms 13 Vectors in 2D 14 Modelling in mechanics 15 Kinematics of constant acceleration	**Units:** 1 Binomial expansion 2 Radians 3 Trigonometric functions 4 Trigonometry & modelling 5 Parametric equations 6 Differentiation	**Units:** 1 Matrices & linear transformations 2 Proof by induction 3 Vectors 4 De Moivre's theorem & nth roots of a complex number 5 Methods in calculus 6 Methods and modelling with differential equations 7 Momentum & impulse 8 Work, energy & power 9 Elastic strings, springs & energy
Phase 2	**Units:** 1 Trigonometric ratios 2 Trigonometric identities and equations 3 Differentiation of polynomials 4 Integration of polynomials 5 Exponentials and logarithms 6 Statistical data collection	**Units:** 1 Statistical data collection 2 Statistical measures of location and spread 3 Representations of data 4 Probability 5 The binomial distribution 6 Hypothesis testing using the binomial distribution 7 Forces and motion 8 Kinematics of variable acceleration 9 Algebraic methods to include proof by contradiction, algebraic and partial fractions 10 Functions and modelling 11 Sequences and series 12 Radians 13 Trigonometric functions 14 Trigonometry & modelling	**Units:** 1 Numerical methods 2 Integration 3 Vectors 4 Moments 5 Forces and friction	**Units:** 1 Series (2) 2 Volumes of revolution (2) 3 Polar coordinates 4 Hyperbolic functions 5 Elastic collisions 6 Algorithms 7 Graphs & networks
			TRIAL EXAMS	**TRIAL EXAMS**
Phase 3	**Units:** 15 Statistical measures of location and spread 16 Representations of data 17 Modelling in mechanics 18 Constant acceleration	**Units:** 1 Binomial expansions 2 Moments 3 Forces and friction 4 Projectiles 5 Application of forces	**Units:** 1 Regression, correlation and hypothesis testing 2 Conditional probability 3 The normal distribution 4 Projectiles 5 Further kinematics 6 Application of forces	**Units:** 1 Algorithms on graphs 2 Route inspection 3 Travelling salesperson problem 4 Linear programming 5 The Simplex algorithm 6 Critical Path analysis 7 Revision
	YEAR 12 EXAMS	**YEAR 12 EXAMS**		
Phase 4	**Units:** 1 Vectors in 2D 2 Correlation 3 Probability 4 Statistical distributions 5 Hypothesis testing using the binomial distribution 6 Forces & motion 7 Kinematics of variable acceleration 8 Algebraic methods to include proof by contradiction, algebraic and partial fractions 9 Functions and modelling 10 Sequences and series	**Units:** 1 Differentiation 2 Numerical methods 3 Integration 4 Vectors 5 Complex numbers & Argand diagrams 6 Series (1) 7 Roots of polynomials 8 Volumes of revolution 9 Matrices 10 Regression, correlation and hypothesis testing 11 Conditional probability 12 The normal distribution 13 Further kinematics	**REVISION**	**REVISION**
			STUDY LEAVE	**STUDY LEAVE**