CURRICULUM INTENT OVERVIEW PLAN (KS4)

Intent Statement – at Brook Sixth Form College, we believe learning mathematics with passion will help learners to gain in depth knowledge and confidence in the subject which in turn enable students to develop mathematical skills, and achieve good academic qualifications, allowing them to progress to A level mathematics or enable them to succeed in their chosen career at the end of year 11. How are you trying to accomplish this, with this Programme of Study (PoS)?
To develop passion in the subject the curriculum is designed and delivered in a collaborative learning atmosphere where the students are encouraged to have communication in the classroom and they feel that it's okay to ask questions. Challenging mathematical concepts are delivered with ease, using subject specific terminology, notation, real life facts, generalisations, interactive methods and techniques. Further the maths curriculum is designed to provide students with a range of skills and knowledge that enable them to succeed, not only in their maths education and examinations, but to also provide a solid foundation in engineering maths and for their futures. An ability to understand and interpret mathematical information presented in a variety of forms and be able to translate from one to another.
Aims – what do you want pupils to be able to know and do by the time they finish this Programme of Study (PoS)?
At the end of two years course, learners should: - Have a deep and broad understanding of the application of maths to a range of problems, as per the National Curriculum for KS4. - Possess a well-rounded knowledge of number properties, calculation skills and algebraic manipulation, an appreciation of shape, space and measure, an appreciation of ratio and proportion (and its role in life) and a broad understanding of statistics and probability - Be fluent in a range of skills across the 5 key areas of mathematics (number, algebra, ratio & proportion, shape, space & measure, and statistics & probability) achieved through clear expert instruction and refined through purposeful practice, interleaving and spaced practice. - Be able to apply logic and reason to understand, unpick and solve a range of problems, including the skills of planning, conjecturing, making generalisations, developing a mathematical argument, justification, and proof - Have an appreciation of mathematics in real life contexts, and have some understanding of where the skills they have developed are used in society and other areas of specialism - Have an appreciation of the language of mathematics and be able to articulate their thoughts, ideas, and conjectures in a mathematically accurate way.
Priority 2: Ensuring that an appropriate (post pandemic) curriculum is delivered effectively, leading to excellent student outcomes and destinations
Entry level test helps to identify the ability of the students and put them in correct sets. Stretch and challenge material should be available to all students in all lessons. Milestone assessments and mini assessments help the teachers to identify the gaps in their knowledge. Students are given feedback on their work and provided with personalised feedback to allow students to make the progress that is most suitable for them, encouraging them to extend their thinking further to more complex contexts where appropriate. Analysis of ALPs data to identify trends regarding the performance of groups of students: SEND, EAL, PP, Low ability and high ability shows excellent attainment results.

Lessons are sequenced to address the national curriculum content in two years

KS4 CURRICULUM: Mathematics (Year 10 – Higher)

Term	Focus	National Curriculum Reference
Autumn 1	Number: 1a. Calculations, checking and rounding 1b. Indices, roots, reciprocals and hierarchy of operations 1c. Factors, multiples, primes, standard form and surds Algebra: 2a. Algebra: the basics, setting up, rearranging and solving equations 2b. Sequences	 N2, N3, N5, N14, N15 N3, N6, N7 N3, N4, N8, N9 N1, N3, N8, A1, A2, A3, A4, A5, A6, A7, A17, A20, A21 N9, A23, A24, A25
Autumn 2	Data Handling 3a. Averages and range 3b. Representing and interpreting data and scatter graphs 14b. Cumulative frequency, box plots and histograms Shapes Volume and surface area of prisms Revision Recall and consolidation of the topics covered	 G14, S2, S3, S4, S5 S1, S2, S3, S4, S6 S1, S3, S4
Spring 1	Numbers 4a. Fractions and percentages 4b. Ratio and proportion Shapes 5a. Polygons, angles and parallel lines 5b. Pythagoras' Theorem and trigonometry Revision Recall and consolidation of the topics covered	 N2, N3, N8, N10, N12, N13, R3, R9 N11, N12, N13, R3, R4, R5, R6, R7, R8, R10 G1, G3, G4, G6, G11 A4, N7, N8, N15, G6, G20, G21

Spring 2	Shapes 13a. Graphs of trigonometric functions 13b. Further trigonometry Algebra 6a. Graphs: the basics and real-life graphs Revision Recall and consolidation of the topics covered	 A8, A12, A13, G21 N16, G11, G20, G22, G23 N13, N15, A8, A10, A14, A15, R1, R11
Summer 1	Algebra 6b. Linear graphs and coordinate geometry 15: Quadratics, expanding more than two brackets, sketching graphs, graphs of circles, cubes and quadratics 9a. Solving quadratics and simultaneous equations 9b. Inequalities Revision Recall and consolidation of the topics covered	 A9, A10, A12, A17, R8, R10 N8, A4, A11, A12, A18 to A22 N8, A4, A9, A11, A18, A19, A21 N1, A22
Summer 2	Shapes 7a. Perimeter, area and circles 7b. 3D forms and volume, cylinders, cones and spheres Data Handling 10. Probability Revision Recall and consolidation of the topics covered for the end of year exam.	 N8, N14, N15, R1, G1, G9, G14, G16, G17, G18 N8, N15, G12, G13, G14, G16, G17 N5, P1 to P9

KS4 CURRICULUM: Mathematics (Year 11 – Higher)

Term	Focus	NC Reference
Autumn 1	Algebra Functions	A5, A6, A7

	Shapes 8a. Transformations 8b. Constructions, loci and bearings	 R6, G5, G6, G7, G8, G24, G25 R2, G1, G2, G3, G12, G13, G15, G19
Autumn 2	Algebra 6a. Graphs: the basics and real-life graphs 6b. Linear graphs and coordinate geometry Shapes 16a. Circle theorems Algebra 9a. Solving quadratics and simultaneous equations 9b. Inequalities Data Handling 10. Probability Numbers 11. Multiplicative Reasoning Shapes 12. Similarity and congruence in 2D and 3D Revision Recall and consolidation of the topics covered	 N13, N15, A8, A10, A14, A15, R1, R11 A9, A10, A12, A17, R8, R10 G9, G10 N8, A4, A9, A11, A18, A19, A21 N1, A22 N5, P1 to P9 N3, N12, N13, R1, R6, R10, R11, R14, R16 R6, R12, G5, G6, G17, G19
Spring 1	Shapes 13a. Graphs of trigonometric functions 13b. Further trigonometry Algebra 17: Changing the subject of formulae (more complex), algebraic fractions, solving equations arising from algebraic fractions, rationalising surds, proof and functions	 A8, A12, A13, G21 N16, G11, G20, G22, G23 N8, A4 to A7, A18

	Iterative methods, transformation of functions Revision Recall and consolidation of the topics covered	
Spring 2	Shapes 16b. Circle geometry 18: Vectors and geometric proof 19a. Reciprocal and exponential graphs; Gradient and area under graphs	A16 R14, R15, A7, A12, A13, A14, A15
Summer 1	Cross Curricular Revision to support Engineering maths AQA) And to Recall and consolidate GCSE maths 7.1 Equations of the topics covered 7.2.1 M1 – Arithmetic and numerical computation 7.2.2 M2 – Handling data 7.2.3 M3 – Algebra 7.2.4 M4 – Graphs	 E1 - E6 M1.1 – M1.7 M2.1 – M2.4 M3.1 – M3.4 M4.1 – M4.4
Summer 2	Revision for final exams	

KS4 CURRICULUM: Mathematics (Year 10 – Foundation)

Term	Focus	NC Reference
Autumn 1	Number: 1a. Integers and place value 1b. Decimals 1c. Indices, powers and roots 1d. Factors, multiples and primes Algebra 2a. Algebra: the basics 2b. Algebraic expressions and substitution into formula	 N1, N2, N3, N4, N14, N15 N1, N2, N3, N13, N15 N6, N7 N4, N5 N1, N3, A1, A3, A4 A2, A4, A5, A6, A7, A21

Autumn 2	Data Handling 3a. Tables, charts and graphs 3b. Pie charts 3c. Scatter graphs 7: Statistics, sampling and the averages 14b. Cumulative frequency, box plots and histograms Shapes Volume and surface area of prisms Revision Recall and consolidation of the topics covered	 G14, S2, S4, S5 G2, G15, S2, S4 S4, S6 S1, S2, S4 S1, S3, S4
Spring 1	Numbers 4a. Fractions, decimals and percentages 4b. Percentages 11a. Ratio 11b. Proportion Algebra 5a. Equations and inequalities 5b. Sequences Revision Recall and consolidation of the topics covered	 N1, N2, N3, N8, N10, N12, N13, R3, R9, S2) N12, N13, R9 N11, N13, R1, R2, R3, R4, R5, R6, R8, R12 N13, R1, R5, R7, R10, R13, R14 N1, N15, N16, A2, A3, A5, A7, A17, A21, A22 A7, A23, A24, A25)
Spring 2	Shapes 6a. Properties of shapes, parallel lines and angle facts 6b. Interior and exterior angles of polygons UNIT 8: Perimeter, area and volume	 G1, G3, G4, G6, G11, G15, A8 G1, G3, G7
Summer 1	Number UNIT 14: Multiplicative reasoning: more percentages, rates of change, compound measures 18a. Fractions Algebra 16a. Quadratic equations: expanding and factorising 16b. Quadratic equations: graphs	 N2, N3, N8 A4, A11, A18) A11, A12, A14, A18

Summer 2	Shapes 15a. Plans and elevations 15b. Constructions, loci and bearings UNIT 17: Perimeter, area and volume 2: circles, cylinders, cones and spheres Number 18b. Indices and standard form Revision Recall and consolidation of the topics covered for the end of year exam.	G1, G2, G9, G12, G13, G15 R2, G2, G5, G15 N7, N9

KS4 CURRICULUM: Mathematics (Year 11 – Foundation)

Term	Focus	National Curriculum Reference
Autumn 1	Algebra 9a. Real-life graphs 9b. Straight-line graphs UNIT 10: Transformations UNIT 13: Probability Revision Recall and consolidation of the topics covered for the end of year exam.	N13, A7, A8, A9, A10, A14, R1, R11, R14, G11, G14 A7, A9, A10, A12, A17
Autumn 2	UNIT 12: Right-angled triangles: Pythagoras and trigonometry 19a. Similarity and congruence in 2D 19b. Vectors Revision Recall and consolidation of the topics covered for the end of year exam.	R6, R12, G5, G6, G7, G19 G24, G25
Spring 1	20 Rearranging equations, graphs of cubic and reciprocal functions and simultaneous equations Revision	

	Recall and consolidation of the topics covered for the end of year exam. Past papers	
Spring 2	Recall and consolidation of the topics covered for the end of year exam. Past papers	
Summer 1	Cross Curricular Revision to support Engineering maths AQA) And to Recall and consolidate GCSE maths 7.1 Equations of the topics covered 7.2.1 M1 – Arithmetic and numerical computation 7.2.2 M2 – Handling data 7.2.3 M3 – Algebra 7.2.4 M4 – Graphs	 E1 - E6 M1.1 – M1.7 M2.1 – M2.4 M3.1 – M3.4 M4.1 – M4.4
Summer 2	Revision for final exams. Past papers	