Curriculum Map

Sandringham School
'Everybody can be Somebody'

Subject: Further Mathematics **Year group: Year 12**

This document maps the Year 12 Curriculum in Further Mathematics.

	Phase One *September – December* *(15 weeks)*	Phase Two *January– March* *(12 weeks)*	Phase Three *April-July* *(13 weeks)*
Content ***Declarative Knowledge – 'Know What'***	***INTENT****: Students complete the Decision Mathematics AS content and learn new Core Pure Mathematics topics which are either independent of A-level mathematics content or dependent only on A-level mathematics Phase 1 content.* **Core Pure Mathematics** Matrices Linear Transformations Complex Numbers Argand Diagrams (including an introduction to Radians) Series Roots of Polynomials **Decision Mathematics** Flowcharts, Sorting and Packing Algorithms Graphs and Networks Minimum Spanning Tree Algorithms (Kruskal's and Prim's) Shortest Path Algorithm (Dijkstra's) Route Inspection Algorithm Graphical Linear Programming Critical Path Analysis	***INTENT:*** *Students complete the Further Mechanics AS content and finish the Core Pure Mathematics topics which are mostly dependent on the A-level Mathematics topics in Phase 2.* **Core Pure Mathematics** Proof By Induction Volumes of Revolution Vectors **Further Mechanics** Momentum and Impulse Work, Energy and Power Elastic Collisions (in 1-dimension)	***INTENT:*** *Students complete an intensive revision programme ahead of the external AS Further Mathematics exams. After the exams students start the A2 Scheme of Work, covering some of the A-level Mathematics calculus A2 content required for A2 Further Mathematics and Decision Mathematics.* The four-week revision programme will cover all 3 modules with the completion of past papers/exam question papers by topic. **A2 Scheme of Work** **Decision Mathematics** Floyd's Algorithm Planarity Algorithm Route Inspection Algorithm (more than 4 odd nodes) Critical Path Analysis (Resource Histograms and Scheduling Diagrams) Content covered depends upon calendar constraints, certain topics may be taught in Y13 **A2 Pure Mathematics** Differentiation Integration

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Skills ***Procedural Knowledge – 'Know How'***	Learn to select appropriate knowledge and methodology to new number, algebra and geometry concepts and apply them in a range of modelling problems in different contexts in Pure Mathematics. Learn to select and apply appropriate algorithms on a small-scale in Decision Mathematics that in real-life are applied to much larger problems with the aid of a computer.	Learn to select appropriate knowledge and methodology to new number, algebra and geometry concepts and apply them in a range of modelling problems in different contexts in Pure Mathematics. Learn to draw clear diagrams and use them to set up the equations required to solve problems. Recognise the limitations of the models used to answer a variety of problems in context.	Review topics to consolidate mathematical understanding and how to apply this knowledge appropriately in the context of the exam. Learn to select and apply appropriate algorithms on a small-scale in Decision Mathematics that in real-life are applied to much larger problems with the aid of a computer.
Key Questions			
Assessment	Baseline (GCSE) Decision 1 mock (AS paper) Core Pure Mathematics assessment for Matrices and Linear Transformations	Core Pure Mathematics assessment for Complex Numbers and Argand Diagrams Core Pure Mathematics in class assessments for topics covered, some of these may be assessed homeworks. Further Mechanics 1 mock (AS paper)	Core Pure Mathematics Mock Paper Applied Mathematics Mock Paper **AS Further Mathematics Exams** Students sit two AS papers: Core Pure Mathematics AS paper 1hr 40mins Decision 1 and Further Mechanics 1 AS paper 1hr 40 mins.
Literacy/Numeracy/ SMSC/Character	Understanding and interpreting calculations used in mathematical modelling problems set in real-life contexts. In Decision Mathematics, studying algorithms developed in the 21st century to help solve real-life complex problems with the power of computers. Aspiration, Resilience, Initiative, Confidence	Understanding and interpreting calculations used in mathematical modelling problems set in real-life contexts. Carrying out algebraic proofs of mathematical identities or formulae used in solving problems. Aspiration, Resilience, Initiative, Confidence	Understanding and interpreting calculations used in mathematical modelling problems set in real-life contexts. In Decision Mathematics, studying algorithms developed in the 21st century to help solve real-life complex problems with the power of computers. Aspiration, Resilience, Initiative, Confidence