Beths Grammar School KS5 Further Maths Curriculum Map – Year 13 Core Pure

A Level Further Maths, Core Pure Year 2

Exam Board: Edexcel

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Term	INTENT	IMPLEMENTATION	IMPACT
	Substantive Knowledge This is the specific, factual content for the topic, which should be connected into a careful sequence of learning.	**Disciplinary Knowledge (Skills)** This is the action taken within a particular topic in order to gain substantive knowledge.	**Assessment opportunities** What assessments will be used to measure student progress? Evidence of how well students have learned the intended content.
Autumn Term 1A Year 13	**Core Pure 2** Chapter 1: Complex numbers • 1.1 Exponential form of complex numbers • 1.2 Multiplying and dividing complex numbers • 1.3 De Moivre's theorem • 1.4 Trigonometric identities • 1.5 Sums of series • 1.6 n th roots of a complex number • 1.7 Solving geometric problems Chapter 2: Series • 2.1 The method of differences • 2.2 Higher derivatives • 2.3 Maclaurin series • 2.4 Series expansions of compound functions	Chapter 1: Complex numbers • Express a complex number in exponential form • Multiply and divide complex numbers in exponential form • Understand De Moivre's theorem • Use De Moivre's theorem to derive trigonometric identities • Use De Moivre's theorem to find sums of series • Know how to solve completely equations of the form $z^n - a - ib = 0$ giving special attention to the cases where $a = 1$ and $b = 0$ • Use complex roots of unity to solve geometric problems Chapter 2: Series • Understand and use the method of differences to sum finite series • Find and use higher derivatives of functions • Know how to express functions as an infinite series in ascending powers using Maclaurin series expansion • Be able to find the series expansions of compound functions	

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	Chapter 3: Methods in calculus • 3.1 Improper integrals • 3.2 The mean value of a function • 3.3 Differentiating inverse trigonometric functions • 3.4 Integrating with inverse trigonometric functions • 3.5 Integrating using partial fractions	Chapter 3: Methods in Calculus • Evaluate improper integrals • Understand and evaluate the mean of a function • Integrate rational functions using trigonometric substitutions Integrate using partial fractions	
Autumn Term 1B Year 13	Chapter 4: Volumes of revolution • 4.1 Volumes of revolution around the x -axis • 4.2 Volumes of revolution around the y -axis • 4.3 Volumes of revolution of parametrically defined curves • 4.4 Modelling with volumes of revolution Chapter 5: Polar coordinates • 5.1 Polar coordinates and equations • 5.2 Sketching curves • 5.3 Area enclosed by a polar curve • 5.4 Tangents to polar curves Chapter 6: Hyperbolic functions • 6.1 Introduction to hyperbolic functions • 6.2 Inverse hyperbolic functions • 6.3 Identities and equations • 6.4 Differentiating hyperbolic functions 6.5 Integrating hyperbolic functions	Chapter 4: Volumes of revolution • Find volumes of revolution around the x -axis • Find volumes of revolution around the y -axis • Find volumes of revolution for curves defined parametrically • Model real-life applications of volumes of revolution Chapter 5: Polar coordinates • Understand and use polar coordinates • Convert between polar and Cartesian coordinates • Sketch curves with r given as a function of θ • Find the area enclosed by a polar curve • Find tangents parallel to, or at right angles to, the initial line Chapter 6: Hyperbolic functions • Understand the definitions of hyperbolic functions • Sketch the graphs of hyperbolic functions • Understand and use the inverse hyperbolic functions • Prove identities and solve equations using hyperbolic functions Differentiate and integrate hyperbolic functions	

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	<u>Chapter 7: Methods in differential equations</u> • 7.1 First-order differential equations • 7.2 Second-order homogeneous differential equations • 7.3 Second-order non-homogeneous differential equations • 7.4 Using boundary conditions <u>Chapter 8: Modelling with differential equations</u> • 8.1 Modelling with first-order differential equations • 8.2 Simple harmonic motion • 8.3 Damped and forced harmonic motion • 8.4 Coupled first-order simultaneous differential equations	<u>Chapter 7: Methods in differential equations</u> • Solve first-order differential equations using an integrating factor • Solve second-order homogeneous differential equations using the complimentary function and the particular integral • Find particular solutions to the differential equations using given boundary conditions <u>Chapter 8: Modelling with differential equations</u> • Model real-life situations with first-order differential equations • Use differential equations to model simple harmonic motion • Model damped and forced oscillations using differential equations • Model real-life situations using coupled first-order differential equations	
Spring Term 2A Year 13	Additional Modules	See specific module curriculum maps	
Spring Term 2B Year 13	Additional Modules	See specific module curriculum maps	
Summer Term 3A Year 13	Revision and Exams	Exam Technique and Exam Questions	
Summer Term 3B Year 13	Exams		