**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 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 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 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 giving special attention to the cases where and * 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   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 -axis * 4.2 Volumes of revolution around the -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 7: Methods in differential equations   * 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   Chapter 8: Modelling with differential equations   * 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 | Chapter 4: Volumes of revolution   * Find volumes of revolution around the -axis * Find volumes of revolution around the -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 given as a function of * 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  Chapter 7: Methods in differential equations   * 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   Chapter 8: Modelling with differential equations   * 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 |  |  |