

# HIGHER MATHEMATICS COURSE

| BLOCK ONE : 9 WEEKS  |   |   |   |
|--|---|---|---|
| The Straight Line  | Sets and Functions  | Trigonometry 1  | Graphs of Functions   |
| <ul style="list-style-type: none"> <li>Distance between two points</li> <li>Midpoints</li> <li><math>m=\tan\theta</math></li> <li>Collinearity</li> <li>Parallel and Perpendicular gradients</li> <li>Altitudes &amp; Medians</li> <li>Perpendicular Bisectors</li> <li>Intersecting lines.</li> </ul> | <ul style="list-style-type: none"> <li>Set Notation</li> <li>Domain and Range</li> <li>Composite functions</li> <li>Inverse functions (Including graphical)</li> <li>Graphs of Inverses</li> <li>Intro: Exponential &amp; Log Graphs</li> </ul> | <ul style="list-style-type: none"> <li>Radian Measure</li> <li>Exact Values</li> <li>Trig Graphs</li> <li>Trig Equations</li> </ul> | <ul style="list-style-type: none"> <li>Graphs of related functions</li> </ul> |
| • 3 Weeks  | • 1.5 Weeks   | • 1 Week  | • 1 Week  |
| STRAIGHT LINE FORMAL HWS   | FUNCTION FORMAL HWS   | TRIG 1 FORMAL HWS   | GRAPHS FORMAL HWS   |
| <b>UNIT ASSESSMENT (C LEVEL) + EXTENDED UNIT ASSESSMENT</b>  |   |   |   |
| <b>W/B 19TH OCTOBER</b>  |   |   |   |

| BLOCK TWO: 7 WEEKS  |  |  |   |
|---|--|--|---|
| Differentiation   | Recurrence Relations   | Quadratics   | Polynomials   |
| <ul style="list-style-type: none"> <li>Basic Differentiation</li> <li>Evaluating rate of change</li> <li>Equations of Tangents</li> <li>Increasing and Decreasing functions</li> <li>Stationary points (closed intervals)</li> <li>Curve Sketching</li> <li>Graphs of the derived function</li> <li>Optimisation</li> </ul> | <ul style="list-style-type: none"> <li>Linear recurrence relations</li> <li>Limit of a RR</li> <li>Solving to find unknown coefficients in linear RR.</li> </ul> | <ul style="list-style-type: none"> <li>Graphs of quadratic functions</li> <li>Sketching quadratic functions</li> <li>Completing the square</li> <li>Solving Quadratic equations/inequations</li> <li>Using the discriminant</li> <li>Intersection of a line and a parabola (Tangency)</li> </ul> | <ul style="list-style-type: none"> <li>Factor and remainder theorems</li> <li>Factorising polynomials.</li> <li>Finding missing coefficients.</li> <li>Solving polynomial equations</li> <li>Curve Sketching</li> <li>Functions from graphs.</li> </ul> |
| • 3 Weeks   | • 1 Week   | • 1.5 Weeks  | • 1 Week  |
| DIFFERENTIATION FORMAL HWS  | RR FORMAL HWS  | QUADRATICS FORMAL HWS  | POLYNOMIALS FORMAL HWS  |
| <b>UNIT ASSESSMENT (C LEVEL) + EXTENDED UNIT ASSESSMENT</b>   |  |  |   |
| <b>W/B 14TH DECEMBER</b>  |  |  |   |

# HIGHER MATHEMATICS COURSE

| BLOCK THREE : 9 WEEKS   |   |   |  |
|---|---|---|--|
| Integration   | Trigonometry 2  | Vectors   | The Circle   |
| <ul style="list-style-type: none"> <li>Basic Integration</li> <li>Definite Integrals</li> <li>Calculating the area between the curve and the x-axis</li> <li>Calculating the area between two curves</li> <li>Differential equations</li> </ul> | <ul style="list-style-type: none"> <li>Addition Formulae</li> <li>Double Angle Formulae</li> <li>Identities</li> <li>Wave Function</li> </ul> | <ul style="list-style-type: none"> <li>Review of Nat 5</li> <li>Position Vectors</li> <li>Unit Vectors</li> <li>Collinearity</li> <li>Section Formulae</li> <li>The Scalar Product</li> <li>Angle between two vectors</li> <li>Perpendicular vectors</li> <li>Applications</li> </ul> | <ul style="list-style-type: none"> <li>The equation of a circle</li> <li>The expanded form of the equation of a circle</li> <li>Intersection of a line and circle</li> <li>Tangents to circles</li> <li>Equations of tangents</li> </ul> |
| <ul style="list-style-type: none"> <li>2 Weeks</li> </ul>   | <ul style="list-style-type: none"> <li>3 Weeks</li> </ul>   | <ul style="list-style-type: none"> <li>2 Weeks</li> </ul>   | <ul style="list-style-type: none"> <li>2 Weeks</li> </ul>  |
| INTEGRATION FORMAL HWS  | TRIG 2 FORMAL HWS   | VECTORS FORMAL HWS  | CIRCLE FORMAL HWS  |
| <b>UNIT ASSESSMENT (C LEVEL) + EXTENDED UNIT ASSESSMENT</b>   |   |   |  |
| <b>W/B 8TH MARCH</b>  |   |   |  |

| BLOCK FOUR: 4 WEEKS   |   |  |   |
|---|---|--|---|
| Further Calculus  | Revision  | Logs and Exponentials  |   |
| <ul style="list-style-type: none"> <li>Differentiate trig functions</li> <li>Chain rule</li> <li>Integrating functions of the form<br/> <math>f(x) = (px + q)^n, n \neq -1</math><br/> <math>f(x) = p\cos(qx + r)</math><br/> <math>f(x) = p\sin(qx + r)</math> </li> </ul> | If any time left over, can use as revision/assessment catch up. | <ul style="list-style-type: none"> <li>Exponential growth and decay</li> <li>Laws of logarithms</li> <li>Logarithmic and Exponential Equations</li> <li>Natural Logarithms</li> <li>Experimental data</li> </ul> | Greyed out topics are now in the optional section of the exam. They do not have to be taught. |
| <ul style="list-style-type: none"> <li>1.5 Weeks</li> </ul>   | <ul style="list-style-type: none"> <li>1.5 Weeks</li> </ul>     | <ul style="list-style-type: none"> <li>2 Weeks</li> </ul>  |   |
| FURTHER CALC FORMAL HWS   |   | LOGS AND EXP FORMAL HWS  |   |
| <b>UNIT ASSESSMENT (C LEVEL) + EXTENDED UNIT ASSESSMENT</b>   |   |  |   |
| <b>W/B 26TH APRIL</b>   |   |  |   |