**Edexcel Maths A Level - Overview 2022-23**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Year Group** | **Autumn Term** | | **Spring Term** | | **Summer Term** | |
|  | **Term 1** | **Term 2** | **Term 3** | **Term 4** | **Term 5** | **Term 6** |
| **Year 12**  *The first year of the course will begin with a review of topics seen at GCSE. These will quickly get expanded upon, where techniques for factorising, expanding, and finding gradients are introduced.*  *In Statistics, students will see new measures of spread and ways of modelling data to test the validity of a hypothesis.*  *In Mechanics, students will be introduced to the laws which govern movement, both with constant acceleration and variable acceleration.* | **Pure**   * Algebra and functions   Indices, surds, quadratics – factorising, solving, graphs, completing the square, discriminants, simultaneous equations, hidden quadratics, inequalities, set notation, algebraic division, factor theorem  **Statistics**   * Sampling   Terminology, advantages and disadvantages of sampling, comparing techniques   * Data presentation and interpretation   Standard deviation, percentiles, linear interpolation, coding, histograms, box plots, outliers, regression lines, correlation | **Pure**   * Coordinate geometry in the (x,y) plane   Straight line graphs, parallel and perpendicular lines, equation of a circle, equation of a tangent   * Trigonometry   Graphs of trig functions, sine and cosine rules, identities, solving trig equations  **Statistics**   * Probability   Mutually exclusive, independent, Venn diagrams   * Statistical distributions   Uniform distribution, binomial distribution | **Pure**   * Graphs and transformations   Cubic, quartic and reciprocal graphs, graph transformations   * Sequences and series   Binomial expansion  **Statistics**   * Statistical hypothesis testing   Null and alternative hypotheses, significance levels, critical regions | **Pure**   * Differentiation   Differentiating polynomials, second derivatives, first principles, gradients, tangents, normals, nature of a turning point, increasing and decreasing functions  **Mechanics**   * Kinematics   Velocity-time graphs and displacement-time graphs, suvat equations, calculus to solve problems with variable acceleration | **Pure**   * Integration   Indefinite integrals, definite integrals, area under a curve   * Algebra and functions   Exponential functions, logarithms – graphs, laws, solving equations, modelling growth and decay   * Vectors   Magnitude, addition of vectors, geometric interpretation, i,j notation  **Mechanics**   * Forces and Newton’s laws * Resolving, force diagrams, smooth pulleys, connected particles | Start of Year 13 content |
| **Year 13**  *Students will now use their Year 1 knowledge to access Year 2 content.*  *They will see formal mathematical proofs for the first time, the formulas for sequences, and key methods used in calculus.*  *In Statistics, the distributions seen a have wider impact outside of Maths, and more of the laws of probability will be used.*  *In Mechanics students will see moments, resolving on a place and motion in 2D.* | **Pure**   * Proof   Proof by contradiction, prove that √2 is irrational, prove the infinity of primes   * Algebra and functions   Algebraic division, modulus functions, combinations of transformations, composite functions, domains and ranges  **Statistics**   * Probability   Conditional probability, laws of probability   * Statistical distributions   Normal distribution, normal approximation with continuity corrections | **Pure**   * Coordinate geometry in the (x,y) plane   Parametric equations, converting between Cartesian and parametric form, parametric differentiation   * Sequences and series   Binomial expansion for any rational power, range of validity, increasing, decreasing and periodic sequences, sigma notation, arithmetic sequences, geometric sequences, sum to infinity  **Statistics**   * Statistical hypothesis testing   Correlation coefficients, normal distributions, distribution of the sample means | **Pure**   * Trigonometry   Radian measure, arc length, sector area, small angle approximations, cosec, sec, cot and their identities, inverse trig functions, double angle formulas, harmonic form   * Differentiation   First principles for sin and cos, points of inflection, convex and concave functions, exponentials, ln(x), trig functions, product rule, quotient rule, chain rule, rates of change, implicit differentiation  **Mechanics**   * Kinematics   suvat equations in 2D, general motion in 2D, projectiles   * Forces and Newton’s laws   Inclined planes, friction | **Pure**   * Algebra and functions   Partial fractions   * Integration   Trapezium rule, iteration, cobweb and staircase diagrams, Newton-Raphson method, integration by parts, integration by substitution, integration using partial fractions, separable first order differential equations  **Mechanics**   * Moments   Moments in simple statics, rigid bodies, ladder problems | Revision |  |