Mathematics Year 11 Higher IGCSE

Edexcel 9 - 1

Term	Curriculum outline
Autumn 1	Students will ~ • **TRANSFORMATIONS:** Understand and use the different transformations of translation, enlargement, reflection and rotation; identify and give complete descriptions of transformations. • **HARDER GRAPHS AND TRANSFORMATION GRAPHS:** Recognise, plot and draw graphs with equation: $y = Ax^3 + Bx^2 + Cx + D$; $y = \sin x$, $y = \cos x$, $y = \tan x$. • **SIMULTANEOUS EQUATIONS:** Calculate the exact solution of two simultaneous equations in two unknowns; interpret the equations as lines and the common solution as the point of intersection; solve simultaneous equations in two unknowns, one equation being linear and the other being quadratic. •
Autumn 2	Students will ~ • **PROBABILITY:** Understand and use estimates or measures of probability from theoretical models; find probabilities from a Venn diagram; understand the concepts of a sample space and an event happening can be determined from sample space; estimate probabilities from previously collected data; calculate the probability of the complement of an event happening; use addition rule of probability for mutually exclusive events; understand and use the term 'expected frequency'; draw and use tree diagrams; determine the probability that two or more independent events will occur; use simple conditional probability when combining events; apply probability to simple problems. • **DEGREE OF ACCURACY:** Identify upper and lower bounds where values are given to a degree of accuracy; solve problems using upper and lower bounds where values are given to a degree of accuracy. • **SET LANGUAGE, NOTATION AND VENN DIAGRAMS:** Understand the definition of a set; use the set notation; understand the concept of the universal set and the empty set and the symbols for these sets; understand and use the complement of a set; use Venn diagrams to represent sets; find probabilities using a Venn diagram; understand sets defined in algebraic terms, and understand and use subsets; use Venn diagrams to represent sets and the number of elements in sets; use the notation n(A) for the number of elements in set A; use sets in practical situations.
Spring 1	Students will ~ • **CIRCLE PROPERTIES:** Understand and use the internal and external intersecting chord properties; recognise the term 'cyclic quadrilateral'; understand and use angle properties including: (i) angle subtended by an arc at the centre of a circle is twice the angle subtended at any point on the remaining part of the circumference, (ii) angle subtended at the circumference by a diameter is a right angle, (iii) angles in the same segment are equal, (iv) the sum of the opposite angles of a cyclic quadrilateral is 180°, (v) the alternate segment theorem. • **ADVANCED TRIGNONOMETRY:** Understand and use the sine and cosine rules for any triangle; use Pythagoras' theorem in 3D, understand and use the formula '½ ab sinC' for

	the area of a triangle; apply trigonometrical methods to solve problems in 3D, including finding the angle between a line and a plane. • **SIMILAR SHAPES:** Understand congruence as meaning the same shape and size; understand that two or more polygons with the same shape and size are said to be congruent to each other; understand and use the geometrical properties that similar figures have corresponding lengths in the same ratio but corresponding angles remain unchanged; understand that areas of similar figures are in the ratio of the square of corresponding sides; understand that volumes of similar figures are in the ratio of the cube of corresponding sides; use areas and volumes of similar figures in solving figures.
Spring 2	Students will ~ • **FUNCTION NOTATION:** Understand the concept that a function is a mapping between elements of two sets; use function notations of the form f(x); understand the terms 'domain' and 'range' and which values may need to be excluded from a domain; understand and find the composite function fg and the inverse function f^{-1} • **VECTORS:** Understand that a vector has both magnitude and direction; understand and use vector notation including column vectors; multiply vectors by scalar quantities; add and subtract vectors; calculate the modulus (magnitude) of a vector; find the resultant of two or more vectors; apply vector methods for simple geometrical prrofs. • **CALCULUS:** Understand the concept of a variable rate of change; differentiate integer powers of x; determine gradients, rates of change, stationary points, turning points (maxima and minima) by differentiation and relate these to graphs; distinguish between maxima and minima by considering the general shape of the graph only; apply calculus to linear kinematics and to other simple practical problems.
Summer 1	Students will ~ • **REVISION FOR IGCSE EXAM**
Summer 2	Students will ~ • **REVISION FOR IGCSE EXAM**