Curriculum Overview Template

	Focus	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 12 A level Maths: Stats	**Topic**	GCSE crossover content focus on algebra	Calculus	Proof, Sampling and data representation	Probability and statistical distributions	Hypothesis testing, Large dataset practice	Further differentiation
	Key concepts/ideas	To use skills learned at GCSE and develop them more to use in applied situations and work on more complex problem solving skills	To learn the basics of calculus, and to apply it to real life scenarios and problems	Beginning the Statistics material with a recap of data representation methods. Looking at 4 types of proof	Recapping and extending knowledge on probability from GCSE and the binomial distribution	Carrying out hypothesis tests using the binomial distribution and getting familiar with the large dataset	Further extending differentiation skills
	Key skills	Consolidate and extend algebra skills learned at GCSE including: 1) Laws of indices- Applying the 3 laws of indices, fractional powers, negative powers 2) Algebraic manipulation- 3) Polynomials- adding and subtracting, recognising the degree of a polynomial, comparing coefficients, factor theorem and algebraic division 4) Surds-Identify, simplify, apply the 4 operations, rationalise the denominator 5) Simultaneous equations- Solving 2 linear, and 1 linear and 1 quadratic equation using a variety of methods 6) Quadratic functions- sketching, solving via the formula, factorising, completing the square and use of the discriminant	Differentiation: 1) Differentiation from first principles 2) Differentiate functions in the form x^n 3) Find the equations of tangents and normal to the curve 4) Use the second derivative as the rate of change of the gradient 5) Identify where functions are increasing and decreasing 6) Find stationary points 7) Solve optimisation problems Integration: 1) Integrate functions in the form x^n 2) Evaluate definite integrals 3) Find the area under a curve	Proof: 1) Direct proof 2) Proof by Exhaustion 3) Disproof by counterexample Sampling: 1) Systematic sampling 2) Quota sampling 3) Simple random sampling 4) Stratified sampling 5) Opportunity sampling 6) Cluster sampling 7) Critiquing and identifying sampling methods given a scenario 8) Identify limits of sampling methods Data representation: 1) Finding mode/median/mean from a list of numbers, frequency table and grouped frequency table (also by calculator) 2) Find the quartiles, interquartile range, variance and standard deviation of data (also by calculator) 3) Identify outliers given a rule 4) Draw and analyse box plots, histograms and cumulative frequency diagrams 5) Draw and analyse scatter graphs and identify correlation	1) Probability notation and rules 2) Tree diagrams 3) Large dataset work 4) Discrete random variables 5) Find probabilities using the Binomial distribution and know the conditions to be able to use it	Hypothesis testing: Carry out hypothesis tests using the binomial distribution Large dataset: Familiarisation with the content, looking at different trends, working with Microsoft excel, analyse different aspects of the data	1) Shapes of functions 2) Differentiating trigonometric functions 3) Differentiating logarithmic and exponential functions 4) Differentiating using the chain rule 5) Differentiating using the product and quotient rule 6) Inverse functions 7) Implicit differentation
	Key terms/vocab	Coefficient, Polynomial, Factorisation, Expansion, Surd, Rationalise, Irrational, Discriminant, Reciprocal, Asymptote	Differentiation, Derivative, Integration, Integral, Tangent, Normal, Rate of change, Optimisation	Direct proof, Axiom, Proof by exhaustion, Disproof by counterexample, Population, Sample, Parameter, Statistic, Bias, Bivariate, Scatter graph, Skew, Histogram, Quartile, Measure of spread/dispersion, Measure of central	Exhaustive, Mutually exclusive, Probability distribution, Sample space, Independent events, Discrete random variable, Binomial distribution	Null/alternate hypothesis, one/two tailed test, critical/acceptance region, significance level,	Concave, Convex, Point of inflection, product rule, quotient rule, chain rule, implicit/explicit functions

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			tendency, Variance, Standard deviation, Outliers, Box plots, Cumulative frequency, Distribution, Correlation, Causal connection, Spurious correlation			
Independent learning / wider reading	Algebraic manipulation: 1)www.youtube.com/watch?v=rjORIsVVPbk 2)www.youtube.com/watch?v=OMo1REfa0Uk 3)www.youtube.com/watch?v=DzrmkoWoTbU Surds: 1)https://www.youtube.com/watch?v=OHCwHQoQNQo 2) https://www.youtube.com/watch?v=Qpbjrm583gE Simultaneous equations: 1) Substitution- https://www.youtube.com/watch?v=hK1QyhhmQ0c 2) Elimination- https://www.youtube.com/watch?v=SqrpJG68EXA 2) https://www.youtube.com/watch?v=lNVLi-9nZWI For more videos and lots of practice questions: www.alevelmathsrevision.com www.revisionmaths.com www.mymaths.co.uk	https://www.youtube.com/watch?v=9pWiu7VxXP4 For more videos and lots of practice questions: www.alevelmathsrevision.com www.revisionmaths.com www.mymaths.co.uk	Sampling: https://www.youtube.com/watch?v=pTuj57uXWlk https://www.youtube.com/watch?v=be9e-Q-jC-0 Representing and interpreting data: https://www.youtube.com/watch?v=8Y40fho0kQw https://www.youtube.com/watch?v=VUaOCgJTPjl For more videos and lots of practice questions: www.alevelmathsrevision.com www.revisionmaths.com www.mymaths.co.uk	Probability: https://www.youtube.com/watch?v=kNOrDWm15bY Binomial distribution: https://www.youtube.com/results?search_query=binomial+distribution For more videos and lots of practice questions: www.alevelmathsrevision.com www.revisionmaths.com www.mymaths.co.uk	Hypothesis testing: https://www.youtube.com/watch?v=RLoQH9O2gAE Large dataset on transport: This can be found on the student shared area, maths, A level. For more videos and lots of practice questions: www.alevelmathsrevision.com www.revisionmaths.com www.mymaths.co.uk	Chain and product rule: https://www.youtube.com/watch?v=esxNDR1epeo Implicit functions: https://www.youtube.com/watch?v=LGY-DjFsALc For more videos and lots of practice questions: www.alevelmathsrevision.com www.revisionmaths.com www.mymaths.co.uk
Assessment	Introduction test- assess what students already know on the GCSE crossover material	Autumn Test on topics covered on both sides of the course so far	Mock examination on topics covered on both sides of the course so far (pure and mechanics, no statistics)	Spring test on all pure content studied so far and Statistics (no mechanics)		Progress exam on all year 12 content
Careers links	Engineering, Economics, Finance, Forecasting, Biology, Chemistry, Physics	Engineering, Economics, Finance, Forecasting, Biology, Chemistry, Physics	Economics, Finance, Geographer, Forecasting, any sort of business analysis, Biology, Chemistry, Physics	Economics, Finance, Geographer, Forecasting, any sort of business analysis, Biology, Chemistry, Physics	Economics, Finance, Geographer, Forecasting, any sort of business analysis, Biology, Chemistry, Physics	Economics, Finance, Geographer, Forecasting, any sort of business analysis, Biology, Chemistry, Physics

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	Key skills						
	Key terms/vocab						
	Independent learning / wider reading						

Assessment						
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