Beths Grammar School KS5 Further Mathematics Curriculum Map – Yr 13 FS1

A Level Further Maths, Further Statistics 1

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 content	See Curriculum Map for Yr 13 Further Maths	
Autumn Term 1B Year 13	Core Pure 2 content	See Curriculum Map for Yr 13 Further Maths	
Spring Term 2A Year 13	<u>Further Statistics 1</u> <u>Chapter 1: Discrete Random Variables</u> • 1.1 Expected Value of a Discrete Random Variable • 1.2 Variance of a Discrete Random Variable • 1.3 Expected Value and Variance of a Function of X • 1.4 Solving Problems Involving Random Variables	<u>Chapter 1: Discrete Random Variables</u> • Find the expected value of a discrete random variable X • Find the expected value of X^2 • Find the variance of a discrete random variable • Use the expected value and variance of a function of X • Solve problems involving random variables	• In class teacher assessment through Q&A • End of chapter mini test (with peer marking) • Chapter revision exercise via textbook • End of term review exercises via textbook • End of term formal mixed chapter assessment

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	<u>Chapter 2: Poisson Distributions</u> • 2.1 The Poisson Distribution • 2.2 Modelling with the Poisson Distribution • 2.3 Adding Poisson Distributions • 2.4 Mean and Variance of a Poisson Distribution • 2.5 Mean and Variance of the Binomial Distribution • 2.6 Using the Poisson Distribution to Approximate the Binomial Distribution <u>Chapter 3: Geometric and Negative Binomial Distributions</u> • 3.1 The Geometric Distribution • 3.2 Mean and Variance of a Geometric Distribution • 3.3 The Negative Binomial Distribution • 3.4 Mean and Variance of the Negative Binomial Distribution <u>Chapter 4: Hypothesis Testing</u> • 4.1 Testing for the Mean of a Poisson Distribution • 4.2 Finding Critical Regions for a Poisson Distribution • 4.3 Hypothesis Testing for the parameter p of a Geometric Distribution • 4.4 Finding Critical Regions for a Geometric Distribution	<u>Chapter 2: Poisson Distributions</u> • Use the Poisson distribution to model real-world situations • Use the additive property of the Poisson distribution • Understand and use the mean and variance of the Poisson distribution • Understand and use the mean and variance of the binomial distribution • Use the Poisson distribution as an approximation of the binomial distribution <u>Chapter 3: Geometric and Negative Binomial Distributions</u> • Understand and use the geometric distribution • Calculate and use the mean and variance of the geometric distribution • Understand and use the negative binomial distribution • Calculate and use the mean and variance of the negative binomial distribution <u>Chapter 4: Hypothesis Testing</u> • Use hypothesis tests to test for the mean λ of a Poisson distribution • Find critical regions of a Poisson distribution using tables • Use hypothesis tests to test for the parameter p in a geometric distribution • Find critical regions of a geometric distribution	

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Spring Term 2B Year 13	<u>Chapter 5: Central Limit Theorem</u> • 5.1 The Central Limit Theorem • 5.2 Applying the Central Limit Theorem to Other Distributions <u>Chapter 6: Chi-Squared Tests</u> • 6.1 Goodness of Fit • 6.2 Degrees of Freedom and the Chi-Squared Family of Distributions • 6.3 Testing a Hypothesis • 6.4 Testing the Goodness of Fit with Discrete Data • 6.5 Using Contingency Tables • 6.6 Apply Goodness of Fit Tests to Geometric Distributions <u>Chapter 7: Probability Generating Functions</u> • 7.1 Probability Generating Functions • 7.2 Probability Generating Functions of Standard Distributions • 7.3 Mean and Variance of a Distribution • 7.4 Sums of Independent Random Variables • <u>Chapter 8: Quality of Tests</u> • 8.1 Type I and Type II errors • 8.2 Finding Type I and Type II errors Using the Normal Distribution • 8.3 Calculate the Size and Power of a Test • 8.4 The Power Function	<u>Chapter 5: Central Limit Theorem</u> • Understand and use the central limit theorem to approximate the sample mean of a random variable $\bar{X}$ • Apply the central limit theorem to other distributions <u>Chapter 6: Chi-Squared Tests</u> • Form hypotheses about how well a distribution fits as a model for an observed frequency distribution and measure the goodness of fit of a model to observed data • Understand degrees of freedom and use the chi-squared χ^2 family of distributions • Be able to test a hypothesis • Apply the goodness-of-fit tests to discrete data • Use contingency tables • Apply the goodness-of-fit tests to geometric distributions <u>Chapter 7: Probability Generating Functions</u> • Understand the use if probability generating functions • Use probability generating functions for standard distributions • Use probability generating functions to find the mean and variance of a distribution • Know the probability generating function of the sum of independent random variables <u>Chapter 8: Quality of Tests</u> • Know about Type I and Type II errors • Find Type I and Type II errors using the normal distribution • Calculate the size and power of a test • Draw a graph of the power function for a test	• In class teacher assessment through Q&A • End of chapter mini test (with peer marking) • Chapter revision exercise via textbook • End of term review exercises via textbook • End of term formal mixed chapter assessment
Summer Term 3A	Revision and Exams	Exam Technique and Exam Questions	

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Year 13			
Summer Term 3B Year 13	Exams		