Quality of Education: *Curriculum is planned and sequenced so that new **knowledge** and **skills** build on what has been taught before and towards its clearly defined end points.*

Ormiston Victory Academy

SUBJECT: Higher Statistics	**CURRICULUM PROGRESSION PATHWAYS**	**CL: ZBR and AHA**	**2019-2020**	
KS3 (Level 1)	KS4 (Level 2)	KS5 (Level 3)	Further Education and training	Careers
Data • Identify sources of primary and secondary data. • Choose a suitable sample size and identify a random sample. • Understand how to reduce bias in sampling and questionnaires. • Use two-way tables. • Interpret and draw dual bar charts and compound bar charts. • Group discrete and continuous data. • Draw and interpret grouped frequency diagrams. • Interpret and draw line graphs. • Recognise when a graph is misleading. • Draw and interpret pie charts. • Graph paper and draw scatter graphs. • Describe the correlation between two sets of data. • Draw a line of best fit and use it to estimate values. **Averages** • Choose the most appropriate average for a set of data. • Find the mode, median, mean and range for a set of data. • Compare sets of data using averages and the range. **Probability** • Calculate and compare probabilities. • Decide if a game is fair. • Identify mutually exclusive outcomes and events. • Find the probabilities of mutually exclusive outcomes and events. • Find the probability of an event not happening.	**Data** • Construct and use back-to-back stem and leaf diagrams. • Construct and use frequency polygons and pie charts. • Plot and interpret time series graphs. • Use trends to predict what might happen in the future. • Plot and interpret scatter graphs. • Determine whether or not there is a linear relationship between two variables. • Draw a line of best fit on a scatter graph. • Use the line of best fit to predict values. • Decide which average is best for a set of data. • Estimate the mean and range from a grouped frequency table. • Find the modal class and the group containing the median. • Construct and use two-way tables. • Choose appropriate diagrams to display data. • Recognise misleading graphs. • Understand how to take a simple random sample. • Understand how to take a stratifi ed sample. • Draw and interpret cumulative frequency tables and diagrams. • Work out the median, quartiles and interquartile range from a cumulative frequency diagram. • Find the quartiles and the interquartile range from stem-and-leaf diagrams. • Draw and interpret box plots. • Understand frequency density. • Draw histograms. • Interpret histograms. • Compare two sets of data.	**Mathematics A-Level** Data • Understand advantages and disadvantages of populations, samples, census, types of sampling and types of data • Calculate measures of central tendency, measure of location and measures of spread • Calculate variance and standard deviation • Understand and use coding • Draw and interpret bow plots, cumulative frequency, histograms and compare two data sets/identify outliers • Draw and interpret scatter graphs and interpret correlation and understand causation • Interpret coefficients of regression lines and use them to make predications **Probability** • Draw and interpret venn diagrams • Draw and use tree diagrams • Understand mutually exclusive and independent events and determine if two events	• Actuarial Science • Aeronautical Engineering • Chemical Engineering • Civil Engineering • Economics • Electrical/Electronic Engineering • Engineering (General) • Mathematics • Mechanical Engineering • Physics • Statistics	• Actuarial Science • Aeronautical Engineering • Chemical Engineering • Civil Engineering • Economics • Electrical/Electronic Engineering • Engineering (General) • Mathematics • Mechanical Engineering • Physics • Statistics

Core knowledge and skills mapped across the curriculum

• Calculate the relative frequency of a value. • Use relative frequency to estimate the probability of an event. • Use estimated probability to calculate expected frequencies. • Carry out a probability experiment. • Estimate probability using data from an experiment. • Work out the expected results when an experiment is repeated. • List all the possible outcomes of one or two events in sample space diagrams or Venn diagrams. • Calculate probabilities of repeated events. • Use tree diagrams to find the probabilities of two or more events.	**Averages** • Decide which average is best for a set of data. • Estimate the mean and range from a grouped frequency table. • Find the modal class and the group containing the median. **Probability** • Use the product rule for finding the number of outcomes for two or more events. • List all the possible outcomes of two events in a sample space diagram. • Identify mutually exclusive outcomes and events. • Find the probabilities of mutually exclusive outcomes and events. • Find the probability of an event not happening. • Work out the expected results for experimental and theoretical probabilities. • Compare real results with theoretical expected values to see if a game is fair. • Draw and use frequency trees. • Calculate probabilities of repeated events. • Draw and use probability tree diagrams. • Decide if two events are independent. • Draw and use tree diagrams to calculate conditional probability. • Draw and use tree diagrams without replacement. • Use two-way tables to calculate conditional probability. • Use Venn diagrams to calculate conditional probability. • Use set notation.	are independent • Understand and use discrete probability distributions including discrete uniform distributions • Understand the binomial distribution as a model • Calculate probabilities for the binomial distribution • Calculate cumulative probabilities for binomial distribution • Understand language and concept of hypothesis testing • Find critical values of a binomial distribution using tables • Carry out one and two tailed tests for the proportion of the binomial distribution and interpret results		

Core knowledge and skills mapped across the curriculum