Subject Curriculum Overview for Academic Year 2022/2023

Subject: Mathematical Studies	Subject Leader: Claire Teague	Year Group: 13	AUTUMN TERM
Topic	**Key Learning Points**	**Key Vocabulary**	**Assessments**
Critical analysis	• Understand how information can be presented to lead people into making decisions that are not good decisions • Understand why critical analysis is important. How to determine whether an argument is logical, well-constructed and reasonable. Analyse the underlying mathematical evidence to see if it supports the argument. • Understand how the data selected by a reporter or writer can bias the reader and give them a different view on research. • Critically appraise misleading data and graphs, understand how graphs can mislead. • Critically analyse mathematical models	Robust evidence, reasoning, conclusion, clarity, emotive language, vague language, justifiable, contradictory, selectivity of data, representative, placebos, control groups, ethical, misleading, coincidence, anecdotal evidence	Students will complete tutorial work and assignments on each topic. There will be a summative assessment at the end of each topic. Both the assignments and the topic end tests are based on past exam questions and include new and old material. After each assignment and topic end test there will be an opportunity for students to review their understanding. Teachers will provide students with targeted feedback, based on their test performance. At the end of the term students will have a longer summative assessment based on past exam questions including approximately 50% of questions designed to review past topics to improve recall.
Graphs	• Interpretation of a graph in particular using real life data, be able to describe what the graph shows using context and accuracy. • Begin to be able to plot a quadratic graph and understanding elements of an equation that translate a graph on the axis. • Understand how to solve a quadratic equation and understand the relationship between the roots of a quadratic and the graphical solution to an equation • Understand how to plot a cubic graph • Learn to solve simultaneous equations graphically including quadratic equations	Gradient, y intercept, solution, simultaneous, linear, quadratic	
Rates of Change	• Be able to draw and interpret time distance graphs • Understand that the gradient of a curve changes constantly - understand how to estimate the gradient of a curve using a tangent (an instantaneous rate of change) • Draw and interpret velocity time graphs. Calculate acceleration using a gradient • Understand how a distance time graph can be used to produce a velocity time graph • Learn and use SUVAT equations to answer speed distance and time problems.	Speed, velocity, acceleration, average speed, instantaneous speed, tangent	

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Exponential functions Using natural logs to solve equations	• Find values of exponential functions • Plot exponential graphs, clearly indicating intersection points • Understand the use of E as a standard base for exponential functions • Formulate and use exponential functions- solve exponential functions using natural logs • Use exponential functions as a model of growth and decay	Exponential growth and decay Natural logarithm, Euler's number, base	. Students will complete tutorial work and assignments on each topic. There will be a summative assessment at the end of each topic. Both the assignments and the topic end tests are based on past exam questions and include new and old material. After each assignment and topic end test there will be an opportunity for students to review their understanding. Teachers will provide students with targeted feedback, based on their test performance. At the end of the term students will have a longer summative assessment based on past exam questions including approximately 50% of questions designed to review past topics to improve recall.
Preliminary materials investigation	• Investigate the preliminary materials issued by the exam board. Design possible questions from the data provided		

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Topic	**Key Learning Points**	**Key Vocabulary**	**Assessments**
Revision of previously learned material	A planned revision programme tailored to the student's needs, informed by the students mock results and test results throughout the year. All major topics will be covered in class.		There will be a programme of both formative and summative assessments throughout the revision programme to inform the student and the teacher of progress. These are based on past exam questions. There will also be opportunity in the classroom for student to complete past exam papers. There will be an opportunity for students to review their understanding. Teachers will provide students with targeted feedback, based on their performance.

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How parents can support learning in the subject this academic year
Ensure your child completes all homework set and is revising for tests in class which will be set at the end of each topic. Ensure your child asks the class teacher if unsure of anything covered in class, A levels are much more complex than the learning they have done before and they need to ensure understanding before moving on. Accountancy topics are hierarchical in nature and missed topics (or even single lessons) will cause gaps in their knowledge making future topics difficult to grasp. They should take a proactive approach to missed content using their text books to read sections missed and ensure that they attempt home works from missed lesson, they should ensure they catch up with all work missed. They should come and ask if they are unsure of any topic whether it is because they have missed lessons or are simply unsure of a topic.
Recommended Reading
AQA mathematical studies text book given by school AQA mathematical studies revision guide – given near to exam Preliminary materials produced by exam board on 1 March prior to exam season GCSE text books and class notes will be useful to remain the students of past knowledge (although this will be covered in class) Any newspaper article involving statistics and mathematical modelling will help your child, as an important part of this years work is to analyse data and the underlying statistics, these are often represented poorly in the press. Maths Watch and BBC bite sized are useful resources for many maths topics.
Points to note