Specialist Mathematics T

Rationale

Mathematics is the study of order, relation and pattern. From its origins in counting and measuring it has evolved in highly sophisticated and elegant ways to become the language now used to describe much of the modern world. Statistics is concerned with collecting, analysing, modelling and interpreting data in order to investigate and understand real world phenomena and solve problems in context. Together, mathematics and statistics provide a framework for thinking and a means of communication that is powerful, logical, concise and precise.

Specialist Mathematics course integrating AC/IB provides opportunities to develop rigorous mathematical arguments and proofs, and to use mathematical and statistical models more extensively.

Curriculum

This is a challenging course designed for students who have demonstrated a high level of interest and ability in mathematics. Students should have obtained at least a B grade in 0607-Extended Math, in IGCSE or its equivalent.

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Topics are developed systematically and lay the foundations for future studies in quantitative subjects in a coherent and structured fashion.

Specialist Mathematics is structured over eight units

Unit 1	Unit 2	Unit 3	Unit 4
· functions and graphs · trigonometric functions	· arithmetic and geometric sequences and series · exponential functions · differential calculus	· the Logarithm function · integrals · differential Equations	· counting and probability · basic Statistics · matrices

Unit 5	Unit 6	Unit 7	Unit 8
· vectors · complex numbers	Choice of 2 from: · logic and Proof · abstract Algebra · discrete Maths · further Calculus	· statistics · statistics Extension	Choice of 2 from: · logic and Proof · abstract Algebra · discrete Maths · further Calculus · conics and Independent Project

Where does it lead to?

Specialist Mathematics integrating AC/IB aims to develop students':

- understanding of concepts and techniques drawn from functions, algebra, trigonometry, calculus, discrete maths, vectors, logic and proofs, probability and statistics
- ability to solve applied problems using concepts and techniques drawn from functions, algebra, trigonometry, calculus, discrete maths, vectors, logic and proofs, probability and statistics
- reasoning in mathematical and statistical contexts and interpretation of mathematical and statistical information including ascertaining the reasonableness of solutions to problems
- capacity to communicate in a concise and systematic manner using appropriate mathematical and statistical language
- capacity to choose and use technology appropriately and efficiently. Specialist Mathematics course is designed for students with a strong interest in mathematics, including those intending to study mathematics, statistics, all sciences and associated fields, economics or engineering at university.