



Senior Mathematics Subjects

ESSENTIAL MATHEMATICS – Applied subject

Essential Mathematics' major areas of study are Number, Data, Location and time, Measurement and Finance.

Students learn to recognise definitions, rules and facts from everyday mathematics and data, and to calculate using appropriate mathematical processes.

Students interpret and use mathematics to make informed predictions and decisions about personal and financial priorities through an emphasis on estimation, problem-solving and reasoning.

A course of study in Essential Mathematics can establish a basis for further education and employment in the fields of **trade, industry, business** and **community services**. Students learn within a practical context related to general employment and successful participation in society, drawing on the mathematics used by various professional and industry groups.

GENERAL MATHEMATICS – General subject

General Mathematics' major areas of study are Number and algebra, Measurement and geometry, Statistics, and Networks and matrices.

General Mathematics is designed for students who want to extend their mathematical skills beyond Year 10 but whose future studies or employment pathways do not require calculus.

Students build on and develop key mathematical ideas, including rates and percentages, concepts from financial mathematics, linear and non-linear expressions, sequences, the use of matrices and networks to model and solve authentic problems, the use of trigonometry to find solutions to practical problems, and the exploration of real-world phenomena in statistics.

Students learn to ask appropriate questions, map out pathways, reason about complex solutions, set up models and communicate in different forms. They experience the relevance of mathematics to their daily lives, communities and cultural backgrounds. They develop the ability to understand, analyse and take action regarding social issues in their world.

A course of study in General Mathematics can establish a basis for further education and employment in the fields of **business, commerce, education, finance, IT, social science** and the **arts**.



MATHEMATICAL METHODS – General subject

Mathematical Methods' major areas of study are Algebra, Functions, relations and their graphs, Calculus and Statistics.

Mathematical Methods enables students to see the connections between mathematics and other areas of the curriculum and apply their mathematical skills to real-world problems, becoming critical thinkers, innovators and problem-solvers.

Students learn topics that are developed systematically, with increasing levels of sophistication, complexity and connection, and build on algebra, functions and their graphs, and probability from the knowledge learnt in Year 10. Calculus is essential for developing an understanding of the physical world.

Students develop the ability to translate written, numerical, algebraic, symbolic and graphical information from one representation to another. They make complex use of factual knowledge to successfully formulate, represent and solve mathematical problems.

A course of study in Mathematical Methods can establish a basis for further education and employment in the fields of natural and **physical sciences** (especially physics and chemistry), **mathematics and science education, medical and health sciences** (including human biology, biomedical science, nanoscience and forensics), **engineering** (including chemical, civil, electrical and mechanical engineering, avionics, communications and mining), **computer science** (including electronics and software design), **psychology** and **business**.

SPECIALIST MATHEMATICS – General subject

Specialist Mathematics' major areas of study are Vectors and matrices, Real and complex numbers, Trigonometry, Statistics and Calculus.

Specialist Mathematics is designed for students who develop confidence in their mathematical knowledge and ability, and gain a positive view of themselves as mathematics learners. They will gain an appreciation of the true nature of mathematics, its beauty and its power.

Students learn topics that are developed systematically, with increasing levels of sophistication, complexity and connection, building on functions, calculus, statistics from Mathematical Methods, while vectors, complex numbers and matrices are introduced. Functions and calculus are essential for creating models of the physical world. Statistics are used to describe and analyse phenomena involving probability, uncertainty and variation. Matrices, complex numbers and vectors are essential tools for explaining abstract or complex relationships that occur in scientific and technological endeavours.

Student learning experiences range from practising essential mathematical routines to developing procedural fluency, through to investigating scenarios, modelling the real world, solving problems and explaining reasoning.

A course of study in Specialist Mathematics can establish a basis for further education and employment in the fields of **science, all branches of mathematics and statistics, computer science, medicine, engineering, finance** and **economics**.