Mathematics

Year 10

Essential Mathematics
Prerequisites:
Completion of Y9

General Mathematics
Prerequisites:
MAT (B)

Mathematical Methods
Prerequisites:
MAT (B)

Specialist Mathematics
Prerequisites:
MAT (A)

Senior Pathways

Essential Mathematics
APPLIED SENIOR SUBJECT
Pre-requisites:
Completion of Year 9

General Mathematics
APPLIED SENIOR SUBJECT
Prerequisites:
MAT (B)

Mathematical Methods
GENERAL SENIOR SUBJECT
Prerequisites:
MAX (B)
Entrance Exam

Specialist Mathematics
GENERAL SENIOR SUBJECT
Prerequisites:
MAX (B)
Entrance Exam

1. **Problem-solving skills**: Mathematics is all about solving problems, which makes it an excellent tool for developing problem-solving skills. These skills are not only useful in mathematics but are also valuable in many other areas of life, such as business, engineering, and science.

2. **Logical reasoning**: Mathematics is based on logical reasoning, which means that it teaches us how to think critically and logically. These skills are important in all aspects of life, from making important decisions to analysing complex problems.

3. **Numeracy**: Mathematics is the language of numbers, and being able to understand and work with numbers is a fundamental skill that is essential in many areas of life. From managing finances to calculating cooking measurements, numeracy is a key skill that everyone needs.

4. **Career opportunities**: Many careers, such as engineering, computer science, finance, and data analysis, require a strong background in mathematics. Studying mathematics can open up a wide range of career opportunities.

5. **Intellectual development**: Mathematics is a subject that challenges the mind and requires critical thinking and problem-solving skills. Studying mathematics can help to develop intellectual abilities such as concentration, persistence, and attention to detail.

Subject: General Mathematics

Course Outline: *Prerequisites MAT (B)*

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. 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.

Pathways

General Mathematics Senior Subject

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.

Subject: Mathematical Methods

Course Outline: *Prerequisites MAT (B)*

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 P–10 Australian Curriculum. Calculus is essential for developing an understanding of the physical world. The domain Statistics is used to describe and analyse phenomena involving uncertainty and variation. Both are the basis for developing effective models of the world and solving complex and abstract mathematical problems.

Pathways

Mathematical Methods Senior Subject

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.

Subject: Specialist Mathematics

Course Outline: *Prerequisites MAX (A)*

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. 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.

Pathways

Specialist Mathematics Senior Subject.

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.

Subject: Essential Mathematics

Course Outline: *Prerequisites completion of Year 9*

Essential Mathematics benefits students because they develop skills that go beyond the traditional ideas of numeracy.

Students develop their conceptual understanding when they undertake tasks that require them to connect mathematical concepts, operations and relations. They 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. This is achieved through an emphasis on estimation, problem-solving and reasoning, which develops students into thinking citizens.

Pathways

A course of study in Essential Mathematics can establish a basis for further education and employment in the fields of trade (not electro-technologies), 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.