

## Mathematics Extension 1

1 unit in each of Year 11 and Year 12 (HSC)

### Board Developed Course

**Prerequisites:** The Mathematics Extension 1 Year 11 course has been developed on the assumption that students have studied the content and achieved the outcomes of the NSW *Mathematics Years 7–10 Syllabus*. In particular, the content and outcomes of all substrands of Stage 5.1, Stage 5.2 and Stage 5.3, including the optional substrands: Polynomials, Logarithms, Functions and Other Graphs and Circle Geometry.

**Exclusions:** Students may **not** study the Mathematics Extension 1 course in conjunction with the Mathematics Standard 1 or the Mathematics Standard 2 course.

### Course Description:

- The Mathematics Extension 1 Year 11 course includes the Mathematics Advanced Year 11 course. The Mathematics Extension 1 Year 12 course includes the Mathematics Advanced Year 12 course.
- The Mathematics Extension 2 Year 12 course includes the Mathematics Extension 1 Year 12 course, and therefore, also the Mathematics Advanced Year 12 course.
- All students studying the Mathematics Extension 1 course will sit for an HSC examination.

The study of Mathematics Extension 1 in Stage 6:

- enables students to develop thorough knowledge, understanding and skills in working mathematically and in communicating concisely and precisely
- provides opportunities for students to develop rigorous mathematical arguments and proofs, and to use mathematical models extensively
- provides opportunities for students to develop their awareness of the interconnected nature of mathematics, its beauty and its functionality
- provides a basis for progression to further study in mathematics or related disciplines and in which mathematics has a vital role at a tertiary level
- provides an appropriate mathematical background for students whose future pathways may involve mathematics and its applications in such areas as science, engineering, finance and economics

### Content:

#### Year 11

Topic: Functions	Further Work with Functions Polynomials
Topic: Trigonometric Functions	Inverse Trigonometric Functions Further Trigonometric Identities
Topic: Calculus	Rates of Change
Topic: Combinatorics	Working with Combinatorics

#### Year 12

Topic: Proof	Proof by Mathematical Induction
Topic: Vectors	Introduction to Vectors
Topic: Trigonometric Functions	Trigonometric Equations
Topic: Calculus	Further Calculus Skills Applications of Calculus
Topic: Statistical Analysis	The Binomial Distribution