# Mathematics Extension 2 – HSC Only

1 unit Year 12 (HSC)
**Board Developed Course**
**Prerequisites:**
The Mathematics Extension 2 Year 12 course has been developed on the ***assumption that students have studied the content and achieved the outcomes of the Mathematics Advanced Year 11 course and the Mathematics Extension 1 Year 11 course.***
The Mathematics Extension 2 Year 12 course has also been constructed on the assumption that students are concurrently studying the Mathematics Advanced course and the Mathematics Extension 1 Year 12 course
**Exclusions:** Students may **not** study the Mathematics Extension 2 course in conjunction with the Mathematics Standard 1 or the Mathematics Standard 2 course.

**Course Description:**

- The Mathematics Extension 2 Year 12 course includes the Mathematics Extension 1 Year 12 course and the Mathematics Advanced Year 12 course.
- The Stage 6 Mathematics Advanced, Mathematics Extension 1 and Mathematics Extension 2 courses form a continuum.
- All students studying the Mathematics Extension 2 course will sit for an HSC examination.

The study of Mathematics Extension 2 in Stage 6:

- enables students to develop strong knowledge, understanding and skills in working mathematically and in communicating concisely and precisely
- provides opportunities to develop strong mathematical manipulative skills and a deep understanding of the fundamental ideas of algebra and calculus, as well as an awareness of mathematics as an activity with its own intrinsic value, involving invention, intuition and exploration
- provides opportunities at progressively higher levels for students to acquire knowledge, understanding and skills in relation to concepts within areas of mathematics that have applications in an increasing number of contexts
- provides a basis for progression to further study in mathematics or related disciplines and in which mathematics has a vital role at tertiary level
- provides an appropriate mathematical background for students whose future pathways will be founded in mathematics and its applications in such areas as science, engineering, finance and economics

**Content:**
The Mathematics Extension 2 course is comprised of five Topics, with the Topics divided into Subtopics. The Topics and Subtopics are:

**Year 12**

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| Topic: Proof | The Nature of Proof |
| | Further Proof by Mathematical Induction |
| Topic: Vectors | Further Work with Vectors |
| Topic: Complex Numbers | Introduction to Complex Numbers |
| | Using Complex Numbers |
| Topic: Calculus | Further Integration |
| Topic: Mechanics | Applications of Calculus to Mechanics |