

Mathematics: analysis and approaches at a glance

This course recognizes the need for analytical expertise in a world where innovation is increasingly dependent on a deep understanding of mathematics. This course includes topics that are both traditionally part of a pre-university mathematics course (for example, functions, trigonometry, calculus) as well as topics that are amenable to investigation, conjecture and proof, for instance the study of sequences and series at both higher level (HL and standard level (SL)), and proof by induction at HL.

The course allows the use of technology, as fluency in relevant mathematical software and hand-held technology is important regardless of choice of course. However, there is a strong emphasis on the ability to construct, communicate and justify correct mathematical arguments. There will be a recognition that the development of mathematical thinking is important for a student.

Students who choose this subject at SL or HL should be comfortable in the manipulation of algebraic expressions and enjoy the recognition of patterns and understand the mathematical generalization of these patterns. Students who wish to take Mathematics: analysis and approaches at HL will have strong algebraic skills and the ability to understand simple proof. They will be students who enjoy spending time with problems and get pleasure and satisfaction from solving challenging problems.

This course is suitable for students who may go on to further study in subjects that have a significant level mathematics content, for example mathematics itself, engineering, physical sciences or economics.

The five topics below are covered during the SL course – each of these topics has sub-topics.

- Number and Algebra
- Functions
- Geometry and Trigonometry
- Probability and Statistics
- Calculus