

Course: **MATHEMATICS ADVANCED**

2 Units for each of Preliminary and HSC Board Developed Course



Prerequisites: For students who intend to study the Mathematics course, it is recommended that they study the topics *Real Numbers, Algebraic Techniques and Coordinate Geometry* as well as at least some of Trigonometry and Deductive Geometry from Stage 5.3 (identified by §) of *Mathematics 7-10 Syllabus*, if not all of the content.

Course Description:

The course is intended to give students who have demonstrated general competence in the skills of Stage 5.3 mathematics, an understanding of and competence in some further aspects of mathematics which are applicable to the real world. It has general educational merit and is also useful for concurrent studies in science and commerce. It is sufficient basis for further studies in mathematics as a minor discipline at tertiary level in support of courses such as the life science or commerce. Students who require substantial mathematics at a tertiary level supporting the physical science, computer science or engineering should undertake the Mathematics Extension 1 and Mathematics Extension 2 courses.

Main Topics Covered:

Preliminary Course:

Topics	Subtopics
Functions	MA-F1 Working with Functions
Trigonometric Functions	MA-T1 Trigonometry and Measure of Angles MA-T2 Trigonometric Functions and Identities
Calculus	MA-C1 Introduction to Differentiation
Exponential and Logarithmic Functions	MA-E1 Logarithms and Exponentials
Statistical Analysis	MA-S1 Probability and Discrete Probability Distributions

HSC Course:

Topics	Subtopics
Functions	MA-F2 Graphing Techniques
Trigonometric Functions	MA-T3 Trigonometric Functions and Graphs
Calculus	MA-C2 Differential Calculus MA-C3 Applications of Differentiation MA-C4 Integral Calculus
Exponential and Logarithmic Functions	MA-M1 Modelling Financial Situations
Statistical Analysis	MA-S2 Descriptive Statistics and Bivariate Data Analysis MA-S3 Random Variables

Assessment: HSC course only

External examination	Mark
• Section I Objective-response questions	10
• Section II Short-answer questions	90
	100

Internal assessment	Weighting
• Concepts, skills and techniques	50
• Reasoning and communication	50
	100

Mathematics HSC examination specifications

The examination will consist of a written examination paper of three hours duration (plus five minutes reading time) containing two sections with a total mark value of 100 marks. All questions in the examination are compulsory.

The Mathematics examination paper will be based mainly on the Mathematics HSC course and will focus on the course objectives and HSC course outcomes. The Mathematics Preliminary course will be assumed knowledge for this examination. Questions focusing on Mathematics HSC course outcomes may also relate to knowledge, skills and understanding from the Mathematics Preliminary course.