Mathematics: Specialist
Units 1-2

All students who study Specialist Units 1 and 2 must also study Mathematical Methods Units 1 and 2. Students need to have satisfactorily completed Specialist Mathematics Units 1 and 2 and Mathematical Methods Units 1 and 2 prior to studying Specialist Mathematics Units 3 and 4.

Students in this course must have an approved CAS calculator.

UNIT 1
Students study techniques in the simplification and solution of a range of algebraic expressions and equations, graphing techniques, matrices and transformations of linear and non-linear relations and complex numbers. Students use CAS calculators to explore skills and concepts as well as practising skills without using technology.

LEARNING ACTIVITIES
Textbook exercises, worksheets, revision activities, application tasks.

KEY SKILLS REQUIRED
Mathematical skills and understanding, graphing calculator technology, application of mathematical skills and knowledge.

ASSESSED TASKS
Topic tests, application tasks and a mid-year written examination.

UNIT 2
Students extend their knowledge of geometry, apply their understanding from Unit 1 to develop techniques in working with vectors, kinematics and explore simulation and sampling techniques in statistics.
Students use CAS calculators to explore skills and concepts as well as practising skills without using technology.

LEARNING ACTIVITIES
Textbook exercises, worksheets, revision activities and application tasks.

KEY SKILLS REQUIRED
Mathematical skills and understanding, CAS calculator technology, application of mathematical skills and knowledge.

ASSESSED TASKS
Topic tests, application tasks and two end of semester written examinations.

Specialist Mathematics

Units 3-4

Specialist Mathematics is recommended for students intending to study mathematics, science, computing or engineering based university subjects. A high level of mathematics is essential in our rapidly changing and technologically advanced world. Students enrolled in this course must also be enrolled in Mathematical Methods Units 3 and 4. Successful completion of both Specialist Mathematics Units 1 and 2 and Mathematical Methods Units 1 and 2 is highly recommended to undertake Specialist Mathematics Units 3 and 4.

UNIT 3
Students will study vectors, complex numbers, coordinate geometry, trigonometry and calculus.

LEARNING ACTIVITIES
Textbook exercises, revision activities, note taking, writing of summaries, analysis and applications exercises. Many of these activities will also incorporate the use of technology, primarily the TI-Nspire graphing calculator.

KEY SKILLS REQUIRED
High level mathematical skills and understanding is required. A large bank of key skills and knowledge from studying Year 11 Advanced General Mathematics and Maths Methods CAS is assumed. Students are expected to be able to apply techniques, routines and processes related to the areas of study with and without the use of technology.

ASSESSED TASKS
Two school assessed analysis tasks.

UNIT 4
Students will study calculus techniques and applications, particularly integral calculus. This leads to the study of the mathematics of movement and motion, with topics include differential equations, kinematics, vector calculus, statics and dynamics. The study of probability and statistics includes statistical inference related to the definition and distribution sample means, simulations and confidence intervals.

LEARNING ACTIVITIES

Textbook exercises, revision activities, note taking, writing of summaries, analysis and applications exercises. Many of these activities will also incorporate the use of technology, primarily the TI-Nspire graphing calculator.

KEY SKILLS REQUIRED

High level mathematical skills and understanding is required. A large bank of key skills and knowledge from studying Specialist Mathematics Units 1 and 2 and Maths Methods Units 1 and 2 is assumed. Students are expected to be able to apply techniques, routines and processes related to the areas of study with and without the use of technology.

ASSESSED TASKS
Application SAC, topic test SACs and two end of year written examinations.

VCAA ASSESSMENT – The overall Study Score will consist of:
School Assessed Coursework (34%), 1 hour written examination (technology free) in November (22%), and 2 hours written examination (technology active) in November (44%).