

8. Year 11 Subjects 2011 (Mathematics)

Studies of Mathematics

General Information

Mathematics courses are designed to provide access to worthwhile and challenging mathematical learning in a way which takes into account the needs and aspirations of a wide range of students. They are also designed to promote students' awareness of the importance of mathematics in everyday life in a technological society, and confidence in making effective use of mathematical ideas, techniques and processes.

Students will engage in the following mathematical activities:

- Apply knowledge and skills.
- Model, investigate and solve problems.
- Use technology.

In General Mathematics (Units 1 and 2) and Mathematical Methods (Units 1, 2, 3 and 4) the use of the TI-Nspire CAS calculator is the main mode for satisfying Learning Outcome 3 (Use of technology). As a result it is compulsory for students undertaking any of these units to purchase or retain their CAS calculator.

Parents and students are advised to note the following:

- Students intending to undertake Mathematical Methods at Year 12 (Units 3 and 4) level must undertake Mathematical Methods at Year 11 (Units 1 and 2) level.
- Students intending to undertake Specialist Mathematics at Year 12 (Units 3 and 4) level must undertake Mathematical Methods (Units 1 and 2) and General Mathematics at Year 11 level.
- The Mathematics courses at Year 12 may form pre-requisites for entry into a range of tertiary courses. It is HIGHLY RECOMMENDED THAT ADVICE IS OBTAINED FROM THE CAREERS COUNSELLOR AND YOUR TEACHER BEFORE SELECTION.

Pre-Requisites

The following pre-requisites apply for VCE Mathematics Units offered at Alphington Grammar School:

Subject	Units	Pre-requisites
General Mathematics	Units 1 & 2	A unit average of at least 50% in Year 10 Mathematics (Semester One).
Mathematical Methods	Units 1 & 2	A unit average of 65% in Year 10 Mathematics (Semester One).

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Maths Methods (CAS) Units 1&2

Units 1 AND Unit 2

Areas Of Study:

Units 1 and 2 are designed in particular as preparation for Mathematical Methods(CAS) Units 3 and 4. The areas of study for Units 1 and 2 are 'Functions and Graphs', 'Algebra', 'Rates of Change and Calculus' and 'Probability'.

Students are expected to be able to apply techniques, routines and processes involving rational and real arithmetic, algebraic manipulation, equation solving, graph sketching, differentiation and integration with and without the use of technology, as applicable. Students should be familiar with relevant mental and by hand approaches in simple cases.

The appropriate use of CAS technology to support and develop the teaching and learning of mathematics, and in related assessments, is to be incorporated throughout the unit.

Assessment:

Both Units 1 and 2 consist of 3 outcomes:

- Outcome 1 – Students should be able to define and explain key concepts as specified in the content from the areas of study, and apply a range of related mathematical routines and procedures.
- Outcome 2 – Students should be able to apply mathematical processes in non-routine contexts, and analyse and discuss these applications of mathematics.
- Outcome 3 - Students should be able to select and use a computer algebra system and other technology to develop mathematical ideas, produce results and carry out analysis in situations requiring problem-solving, modelling or investigative techniques or approaches.

Assessment Break-Down:

Demonstration of achievement of Outcomes 1 and 2 must be based on the student's performance on a selection of assessment tasks.

- Demonstration of achievement of Outcome 1 must be based on a selection of the following tasks:
 - Assignments, tests, summary or review notes.
- Demonstration of achievement of Outcome 2 must be based on a selection of the following tasks:
 - Projects, short written responses, problem-solving tasks, modelling tasks.
 - *These tasks may also have relevance to the assessment of Outcome 1.*
- For each unit, demonstration of achievement of Outcome 3 must be based on the student's performance on a selection of tasks completed in demonstrating achievement of Outcomes 1 and 2, which incorporate the effective and appropriate use of technology in contexts related to topics in the selected material from the areas of study.

One element of the assessment indicated above will be an End-of-Semester Examination each Semester.