



Specialist Mathematics

What is Specialist Mathematics?

Mathematics is a key enabling science for the technologies that are driving the new global economy. Much of the power of computers derives from their ability, in the hands of mathematically knowledgeable people, to harness the subject in new and creative ways.

Specialist Mathematics presents three traditional topics, complex numbers, vectors and geometry, and the calculus of trigonometric functions, in a way that promotes their fundamental concepts as a paradigm for models of interacting quantities. The aim is to provide students with an appreciation of certain mathematical ideas that are both elegant and profound, and at the same time, allow them to understand how this kind of mathematics enables computers to model, for example, chemical, biological, economic, and climatic systems.

Specialist Mathematics will develop ideas that are new to the student, and give a new emphasis to familiar ones, by featuring the modelling capabilities of the topics presented.

Why study Specialist Mathematics?

Specialist Mathematics will enable students to experience and understand mathematics as a growing body of knowledge for creative use in application to an external environment; a view of mathematics that students are likely to find relevant to their world.

This subject deals with phenomena from the students' common experiences, as well as from scientific, professional, and social contexts. Students can gain from Specialist Mathematics the insight, understanding, knowledge, and skills to follow pathways that will lead them to become designers and makers of technology.

Course content of Specialist Mathematics

Students study five topics:

- Topic 1: Trigonometric Preliminaries
- Topic 2: Polynomials and Complex Numbers
- Topic 3: Vectors and Geometry
- Topic 4: Calculus
- Topic 5: Differential Equations

Assessment Components

Assessment in Specialist Mathematics consists of the following components, weighted as shown:

School Based Component: 70%

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| • Topic Tests | 45% |
| • Folio Tasks | 25% |

Externally Moderated Component: 30%

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| • External Examination | 30% |
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Specialist Mathematics continued

Learning Requirements of the Course

At the end of the program in Stage 2 Specialist Mathematics, students should be able to:

- understand fundamental mathematical concepts, demonstrate mathematical skills, and apply mathematical procedures in routine and non-routine contexts
- practise mathematics by analysing data and any other relevant information elicited from the study of situations taken from social, scientific, economic, or historical contexts
- think mathematically through inquiry, evaluation, and proof
- make informed and critical use of electronic technology to provide numerical results and graphical representations, and to refine and extend mathematical knowledge
- communicate mathematically, and present mathematical information in a variety of ways
- work both individually and cooperatively in planning, organising, and carrying out mathematical activities.

Future Pathways in Specialist Mathematics

- Mathematical Sciences
- Engineering
- Computer Science
- Physical Sciences
- Surveying
- Students envisaging careers in other related fields, including economics and commerce, may also benefit from studying this subject.

Required Texts for Specialist Mathematics

- Mathematics For Yr 12: Specialist Mathematics, with CD, Haese
- Specialist Mathematics Revision Guide (current edition)
- Mathematics For Yr 12: Specialist Math Skills & Concepts, Haese
- Calculator: Casio Graphic FX-9860GAU PLUS

What are the prerequisites?

- B promotion grade in Year 11 Specialist Mathematics

NOTE:

Specialist Mathematics must be studied in conjunction with Mathematical Studies.



TRINITY COLLEGE
Senior

Contact Details

For more information about studying Year 12 at Trinity College Senior, please contact the Head of Year 12 on 8523 8705 or visit: www.trinity.sa.edu.au/curriculum/index.htm

Further Information

More information about SACE may be obtained from the SACE Board of South Australia webpage at: www.sace.sa.edu.au