

Mathematics B

Subject guide 2008

This subject guide relates to courses developed from the Mathematics B Senior Syllabus 2008.

What is Mathematics B all about?

Mathematics B aims to provide you with the opportunity to participate more fully in lifelong learning and to appreciate that Mathematics is a:

- unique and powerful way of viewing the world to investigate patterns, order, generality and uncertainty
- way of thinking in which problems are explored through observation, reflection and logical, inductive or deductive reasoning
- powerful, concise and unambiguous symbolic system with written, spoken and visual components
- creative activity with its own intrinsic value, involving invention, intuition and exploration.

What will you learn?

In Mathematics B, you will study mathematical functions and their applications, differential and integral calculus and applied statistical analysis. While studying these you will develop:

- knowledge and skills in advanced computation and algebraic methods and procedures
- mathematical modelling and problem-solving strategies and skills
- the capacity to justify mathematical arguments and make decisions
- the capacity to communicate about mathematics in a variety of forms.

Your Mathematics B course will consist of seven core topics:

- Introduction to functions
- Rates of change
- Periodic functions & applications
- Exponential and logarithmic functions and applications
- Introduction to integrations
- Applied statistical analysis
- Optimisation.

How will you learn?

You will undertake life-related applications of mathematics in real and simulated situations, use mathematical technologies and model and problem solve mathematically. You will work individually, in small groups and as a class. You will be required to write, speak, listen or devise presentations in a variety of forms to communicate mathematically.

How will you be assessed?

Assessment in Mathematics B gives you opportunities to demonstrate *Knowledge and procedures*, *Modelling and problem solving*, and *Communication and justification*.

In Mathematics B, assessment instruments include:

- supervised tests — within this category, tests are conducted under supervised conditions and commonly include tasks requiring quantitative and/or qualitative responses.
- extended modelling and problem-solving tasks — within this category, students provide a response to a specific task or issue that could be set in a context that highlights a real-life application of mathematics
- reports — within this category, assessment tasks are typically an extended response to a practical or investigative task such as: an experiment in which a dataset is collected, analysed and modelled; a mathematical investigation; a field activity; or a project.

In Year 12, you will be expected to complete a minimum of five assessment instruments, with at least two of these being an extended modelling and problem-solving task or a report or similar.

Where can Mathematics B take you?

This subject contributes four credits towards the Queensland Certificate of Education (QCE). If you would like to learn more about this certificate, please visit the QCE page on the QCAA website www.qcaa.qld.edu.au.

This subject will provide you with a foundation for tertiary studies in disciplines which include:

- mathematics and statistics
- mathematics and science education
- natural and physical sciences
- medical and health sciences, including human biology, biomedical, nanoscience and forensics
- engineering sciences, including avionics, chemical, civil, communications, electrical, mechanical and mining
- information technology and computer science, including electronic and software
- mathematical applications in:
 - energy and resources — management and conservation
 - climatology
 - design and built environment
 - industry, manufacturing and trades
 - business and tourism
 - primary industries and environment
 - economics and commerce
 - statistics and data analysis.

For further information about future tertiary pathways, consult the QTAC Guide to Tertiary Courses www.qtac.edu.au.

How can parents/carers help?

Your parents/carers may help you by:

- discussing different views of current Mathematics B issues with you
- encouraging and helping you to find suitable websites, documentaries, journals and other resources
- encouraging you to take part in school-based activities, including field trips, and extracurricular activities
- offering their services as guest speakers if they are involved in this area of study or related industry
- encouraging safe and ethical behaviour
- contacting your school to establish communication with your teachers to help understand the work undertaken at senior level, and to become familiar with assessment requirements.

More information

If you would like more information, please email senior.syllabuses@qcaa.qld.edu.au. You can also visit the QCAA website www.qcaa.qld.edu.au and search for 'Mathematics B'.