### Subject Code
620-158

### Title of the subject
Accelerated Mathematics 2

### Credit points
12.5

### Coordinator
A/Prof. B. Hughes

### Semester of offer
2

### Prerequisites and/or corequisites
A study score of at least 38 in VCE Specialist Mathematics 3/4 or equivalent; or permission from the Director of the Mathematics and Statistics Learning Centre; or 620-157.

### Mode of delivery
Lectures and practice classes

### Contact hours
48 one-hour lectures (four per week), 11 one-hour practice classes (one per week)

### Estimated total time commitment
120 hours

### Description
This subject develops fundamental concepts and principles in mathematical analysis. Students should gain skills in the practical techniques of differential calculus, integral calculus and infinite series, and study selected applications of these techniques in mathematical modelling.

Topics covered include heuristic and rigorous discussion of limits of real-valued functions, continuity and differentiability; Mean Value Theorem and applications; Taylor polynomials; Riemann integration, techniques of integration and applications, improper integrals; sequences and infinite series; first order differential equations, second order linear differential equations with constant coefficients and selected applications.

### Assessment
Up to 25 pages of written assignments 10% (due during semester), a 45-minute written test 10% (held mid-semester), a 3-hour written examination 80% (in the examination period).

### Prescribed texts

### Recommended texts

### Notes (credit exclusions etc)
This subject is suitable for students with a high level of achievement in VCE Specialist Mathematics 3/4 or equivalent. This subject together with 620-157 is equivalent, in content, to the three subjects 620-155, 620-156 and 620-295.

Students may only gain credit for one of [07]620-113, [07]620-123, [08]620-143, 620-155, 620-158 or [05]620-193.

Students may only gain credit for one of 620-158 and 620-295.

### Subject objectives
Students completing this subject should:
- understand the significance and applications of
properties of functions such as limits, continuity and differentiability;

- be able to evaluate proper and improper Riemann integrals;
- develop the ability to determine the convergence and divergence of infinite series;
- be able to solve analytically first and second order ordinary differential equations, and use these equations to model some simple physical systems;

and will be exposed to some fundamental results in real analysis such as the Mean Value Theorem.

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<th>Generic skills</th>
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<td>In addition to learning specific skills that will assist students in their future careers in science, they will have the opportunity to develop generic skills that will assist them in any future career path. These include</td>
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- problem-solving skills: the ability to engage with unfamiliar problems and identify relevant solution strategies;
- analytical skills: the ability to construct and express logical arguments and to work in abstract or general terms to increase the clarity and efficiency of analysis;
- collaborative skills: the ability to work in a team;
- time management skills: the ability to meet regular deadlines while balancing competing commitments. |

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<th>Special computer requirements</th>
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