620-158 Accelerated Mathematics 2

Credit Points:	12.50
Level:	1 (Undergraduate)
Dates & Locations:	2009, This subject commences in the following study period/s: Semester 2, - Taught on campus. Lectures and practice classes.
Time Commitment:	Contact Hours: 48 one-hour lectures (four per week), 11 one-hour practice classes (one per week). Total Time Commitment: 120 hours total time commitment
Prerequisites:	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 *Accelerated Mathematics 1* (620-157 Mathematics 1 prior to 2009).
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	Students may only gain credit for one of 620-113 (prior to 2008), 620-123 (prior to 2008), 620-143 (prior to 2009), *Calculus 2*, *Accelerated Mathematics 2* (620-158 Mathematics 2 prior to 2009), or 620-193 (prior to 2006). Students may only gain credit for one of *Accelerated Mathematics 2* (620-158 Mathematics 2 prior to 2009) and *Real Analysis with Applications*.
Core Participation Requirements:	It is University policy to take all reasonable steps to minimise the impact of disability upon academic study and reasonable steps will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact upon their participation are encouraged to discuss this with the subject coordinator and the Disability Liaison Unit.
Coordinator:	Assoc Prof Barry Hughes
Subject Overview:	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.
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.
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:	Thomas' Calculus (M. Weir, J. Hass and F. Giordano), 11th edn, Pearson, 2005.

Breadth Options:	This subject potentially can be taken as a breadth subject component for the following courses: # **Bachelor of Arts (https://handbook.unimelb.edu.au/view/2009/D09)** # **Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2009/F04)** # **Bachelor of Environments (https://handbook.unimelb.edu.au/view/2009/A04)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2009/M05)** You should visit **learn more about breadth subjects (http://breadth.unimelb.edu.au/ breadth/info/index.html)** and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	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: # 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; and # time management skills: the ability to meet regular deadlines while balancing competing commitments.
Notes:	This subject is available for science credit to students enrolled in the BSc (both pre-2008 and new degrees), BASc or a combined BSc course. This subject is suitable for students with a high level of achievement in VCE Specialist Mathematics 3/4 or equivalent. This subject together with *Accelerated Mathematics 1* is equivalent, in content, to the three subjects *Calculus 2*, *Linear Algebra* and *Real Analysis with Applications*. Students who have completed 620-157 Mathematics 1 (prior to 2009) and *Accelerated Mathematics 2* will need to complete additional reading on multivariable calculus to cover the content of *Calculus 2*, *Linear Algebra* and *Real Analysis with Applications*.
Related Majors/Minors/ Specialisations:	First year mathematics and statistics