MAST10012 Introduction to Mathematics

Credit Points:	12.50
Level:	1 (Undergraduate)
Dates & Locations:	2010, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus. Lectures and practice classes.
Time Commitment:	Contact Hours: 3 x one hour lectures per week, 2 x one hour practice classes per week. Total Time Commitment: Estimated total time commitment of 120 hours
Prerequisites:	Successful completion of VCE Mathematical Methods 1/2 or equivalent
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
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:	Ms Bronwyn Pearcy
Contact:	First Year Coordinator **Email: fycoord@ms.unimelb.edu.au (mailto:fycoord@ms.unimelb.edu.au)**
Subject Overview:	Students will strengthen and develop algebraic and conceptual skills, building a firm mathematical base for **620-154 Calculus 1 (/view/2010/620-154)** . Fundamental concepts about number systems and set theory will be followed by introductory counting principles and techniques. These will be applied to the laws of probability, leading to the study of discrete and continuous random variables. Basic ideas about functions and their inverses will be introduced using examples such as the logarithmic, exponential and trigonometric functions. Differential and integral calculus will be studied with applications to graph sketching and optimization problems. Students will also learn integration techniques, with applications to areas between curves.
Objectives:	Students completing this subject should # Understand fundamental concepts of number systems and counting techniques and be able to use logic and set notation; # Understand the concept of a mathematical function, domain, range and inverse function; # Be able to apply transformations and the ideas of sum, difference, product and composite functions to graphing polynomial, exponential, logarithmic and circular functions; # Understand the derivative as a limit and use the product, quotient and chain rules of differentiation with polynomial, circular, exponential and logarithmic functions and apply these techniques to graph sketching and optimisation problems; # Understand the process of integration as anti-differentiation and be able to find definite and indefinite integrals of polynomials, exponential and circular functions with application to calculating the area of a region under a curve and between curves; # Understand the fundamental concepts of probability and be able to calculate probabilities for discrete and continuous random variables, including binomial and normal probabilities.
Assessment:	Ten written assignments due at weekly intervals during semester amounting to a total of up to 25 pages (10%), a 45-minute written test held mid-semester (10%), and a 3-hour written examination in the examination period (80%). Students are required to attend at least 16 out of 22 practice classes to be eligible for assessment.

Prescribed Texts:	M Evans, K Lipson, P Jones, Essential Mathematical Methods 3 & 4, 4th edition, Cambridge University Press, 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/2010/B-ARTS)** # **Bachelor of Environments (https://handbook.unimelb.edu.au/view/2010/B-ENVS)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2010/B-MUS)** 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 mathematical skills, students will have the opportunity to develop generic skills that will assist them in any 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; # Time management skills: the ability to meet regular deadlines while balancing competing commitments.
Notes:	**This subject is not available for science credit or commerce credit in any course.** This subject is equivalent for pre-requisite purposes to VCE Mathematical Methods 3/4. Students with a score of 25 or more in VCE Mathematical Methods 3/4 will not be permitted to enrol in this subject.
Related Course(s):	Bachelor of Biomedicine
Related Majors/Minors/ Specialisations:	Civil (Engineering) Systems Physical (Environmental Engineering) Systems